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ALBERTA NATURALIST

Volume 18, Number 1, Spring 1988.

Yellow Goat's-beard (Tragopogon dubius). (Photo: J.D. Johnson)

ALBERTA NATURALIST

Volume 18, Number 1, May 1988.

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Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1, July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants, Birds and Mammals,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; Compiler cooperation is greatly appreciated.

Editor: Derek Johnson
7109 - 106 St., Edmonton, Alberta T6E 4V5
Telephone: 436-8231 home, 435-7306 work

Executive Assistant: Ann Stefura

Layout: Dick Dekker

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Changes in the Abundance of Fishes in the Red Deer River Below the Dickson Dam

Wayne Roberts

During the five years since the construction and filling of the Dickson Dam on the Red Deer River in 1982, changes in the abundance of certain fish species have occurred below the damsite (Figure 1). Spoonhead Sculpins (Cottus ricei) are much less abundant than they were prior to impoundment of the river. Mountain Whitefish (Prosopium williamsoni) have had poor reproductive success. Spawning occurs in traditional sites below the damsite but larvae exhibit poor survivorship. Large piscivorous species such as the Northern Pike (Esox lucius) and Walleye (Stizostedion vitreum) were declining prior to construction and continue to do so, perhaps at a greater rate. Increased availability to anglers and reduced reproductive success are important factors in this decline. Mooneye (Hiodon tergisus) and Goldeye (H. alosoides) are uncommon between Red Deer and the damsite where they were formerly abundant.

The Spoonhead Sculpin has suffered the greatest relative decline in abundance. Throughout much of their ranges in North America sculpins occur in the same waters as a variety of trout and char species (salmonines) and share with them the requirement for clean, rocky or gravel bottoms for reproduction and/or protective cover. Sculpins and salmonine fishes may thus be regarded as indicators of water and substrate quality in streams where they complete their life cycles. Sculpins are able to utilize the coarse, clean, rocky bottoms of large streams for spawning and are not dependent on the gravel beds of tributaries as are most salmonines and in this regard function as better indicators of substrate cleanliness in rivers. Not generally being subject to angler harvest, changes in numbers of sculpins reflect changes in the environment rather than changes in the utilization of the fishery which may be a consideration with salmonines. Karr (1981) and Karr et al. (1986) list sculpins as intolerant fishes, that is, as sensitive indicators in Index of Biological Integrity assessments of running waters.

The Spoonhead Sculpin is present in streams and rivers of the major east slope drainages of Alberta (Paetz and Nelson 1973). It reaches its greatest abundance in clean-bottomed, free-stone streams such as the upper Red Deer River where its life history has been investigated since 1975. Prior to impoundment of the river, spawning occurred from mid-April to early May when water temperatures had increased to around 5 to 7° C. The male selects a suitable site, usually a rock, and defends it against male conspecifics and other small fishes. Females are courted and subsequently deposit 280 to 1200 adhesive eggs on the underside of the "nest" rock. The male guards and fans the eggs for 2 to 3 weeks until they hatch. The hatchlings are attracted to well-lit areas and are distributed in the quiet shallow waters near shore. They are active during the day foraging for micro-invertebrates on and above the substrate until late in their first summer, when they shift to seeking cover by day and foraging at night for insects and crustaceans. These sculpins first spawn during their third spring at an age of about 23 months.

Prior to the impoundment of the Red Deer River, Spoonhead Sculpins were easily found by turning over flat rocks in the river shallows between the damsite and the vicinity of the city of Red Deer. No quantitative estimates of abundance were made, however, substantial numbers of sculpins were easily obtained at many sites along the river. McCart and Jones (1975) considered the Spoonhead Sculpin to be rare in the Red Deer River, however, sculpin numbers are commonly underestimated by seining and electrofishing owing to their habit of lying concealed under objects during the day. Spoonhead Sculpins are presently much less abundant than they were prior to impoundment of the river. Only three specimens were located during several days of searching in 1986 and all were adults in excess of 100 mm total length. Much of the formerly occupied habitat is devoid of or sparsely occupied by sculpins. The absence of juveniles and young-of-the-year may indicate reproductive failures.

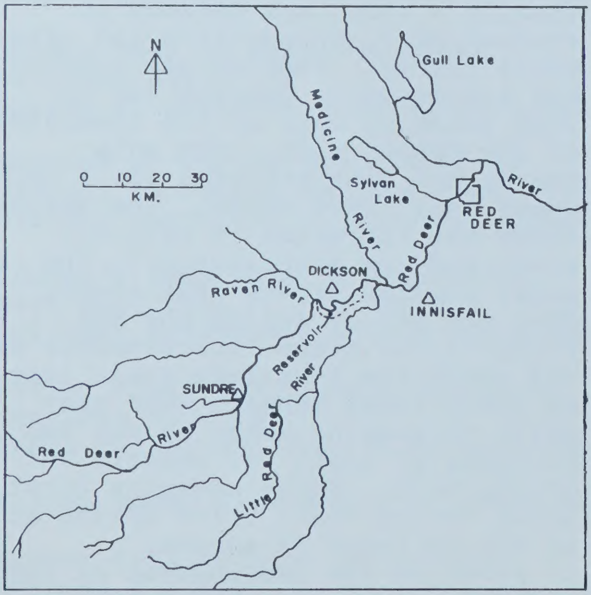
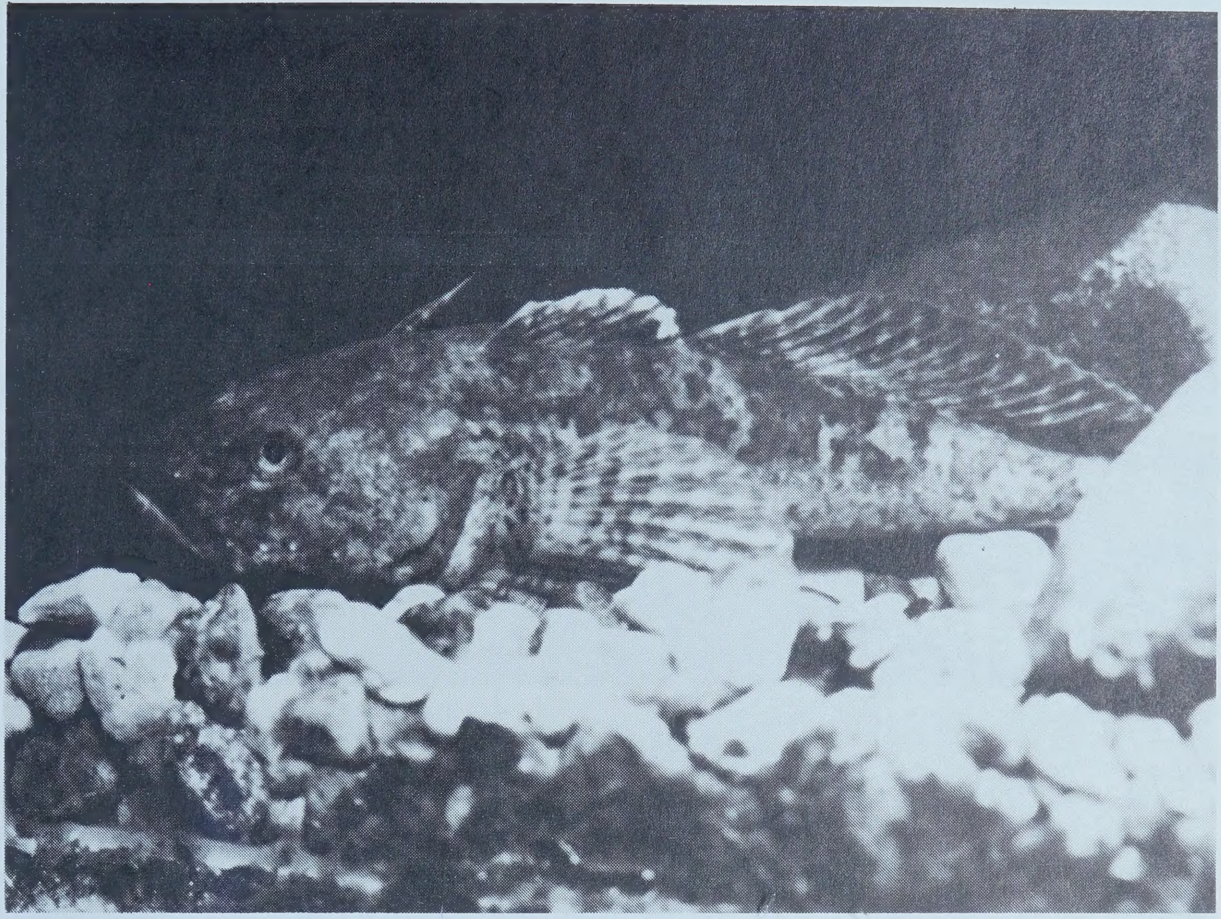


Figure 1. The Dickson Dam and the Red Deer River study area.

The decline in numbers of the spoonhead may be the result of altered habitat and thermal regime. The substrate of the river below the dam is coated with a dense growth of diatoms in the winter and spring. As a result, the plugged interstices in the substrate no longer provide refuge for sculpins and other small fishes such as cyprinids (minnows), catostomids (suckers), troutperch and burbot. The larger invertebrates on which sculpins feed appear to be less abundant. Slower warming of the water in the spring should result in later spawning and slower development of the eggs and larvae. The larvae may find the diatom-coated substrate unsuitable. The response of the Spoonhead Sculpin to ecological change has been both rapid and negative. It may well foretell the fate of other small species.

The Mountain Whitefish is the most abundant sportsfish in the upper reaches of the Red Deer River below the Dickson Dam. The life history of this species has been studied in the Red Deer River since 1977. Prior to flow regulation the river was usually icebound from November to April. The portion of the river upstream from the Highway 54 bridge west of Innisfail to the damsite included the downstream limits of the known spawning grounds of the Mountain Whitefish. Large numbers of fish spawned in this area during October. Hatching of the eggs was synchronous and associated with breakup which occurred from late March to late April. Large numbers of recently-hatched larvae about 14 mm long were seen in the shallows 7 to 10 days after breakup. Young-of-the-year occupied shallow margins, riffles, backwaters and side channels throughout the summer and grew to about 70 mm by fall. Historically, young-of-the-year were visibly abundant.

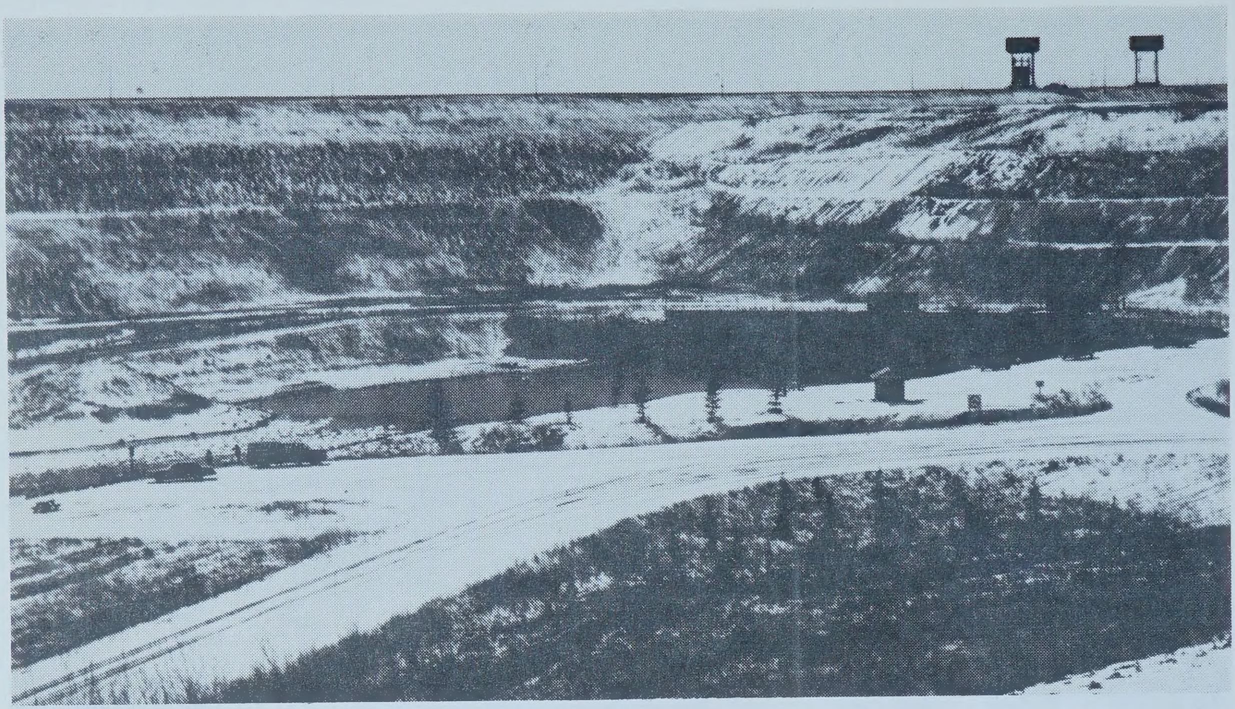
Since the impoundment of the Red Deer River, there has been no spring breakup in the river immedi-



A male Spoonhead Sculpin from the Tay River. Extensive efforts to find a sculpin for photography in the Red Deer River study area failed. (Photo: R. Mandryk and W. Roberts)

ately below the dam. Most of the river where spawning is known to occur is either not icebound or the ice is only a temporary feature during the winter and is absent following warm weather or fluctuations in the water level. Any cues associated with breakup that may have triggered the synchronous hatching of Mountain Whitefish eggs are either absent or occur at an inappropriate time. Large numbers of Mountain Whitefish larvae and young have not been evident in the shallows of the Red Deer during the past few years. Subadults are scarce in this portion of the river while fish of ages four and greater are fairly common and frequently taken by anglers. Small fish 2+ yrs. and 3+ yrs. are seldom taken by anglers as they were in the past.

During mid- to late March of 1986 larval Mountain Whitefish were identified from the stomachs of Lake Whitefish (Coregonus clupeaformis) and found to be abundant in the shallows in areas of slow current. While the numbers of larvae increased over the next three weeks the size range of the larvae remained both uniform and small (about 14 mm) indicating either



The Dickson Dam provides a formidable barrier to fish movement along the Red Deer River. Intensive fishing occurs at the base of the dam throughout the year.

The spillway of the Dickson Dam can be employed to re-establish a more natural thermal regime and water level situation downstream.
(Photos: W. Roberts)

slow growth or that older larvae were dying and being replaced by individuals hatching later. By late April no young-of-the-year Mountain Whitefish were evident along the river margins; the reasons for the poor growth and/or survival of the larvae are unclear.

The synchronous appearance of the larvae in the pre-impoundment era was followed by rapid warming of the river and increasing productivity of microinvertebrates. Presently, warming of the river immediately downstream from the dam is a much slower process and the cooler than normal water may not be favorable for the early growth and survival of Mountain Whitefish larvae. Larvae hatching as early as late February, as in 1988, would face two months of low temperatures prior to warming inlate April or May. While this species still spawns successfully below the Dickson Dam, there is little or no recruitment and the long term survival of this popu-lation of valuable sportsfish is threatened.

During 1987 numerous Mountain Whitefish from the 1986 year class were found below the damsite. These were probably displaced downstream from above the dam by unusually high, late summer water levels during 1986. Periodic influxes of young from upstream may help to maintain stocks downstream from the dam.

The Northern Pike and Walleye have been popular sportsfishes in the Red Deer River from the Raven River downstream to the badlands. The large tributaries such as the Medicine and Little Red Deer rivers were focal points for fisheries for these species. Both species were numerous and grew large in these waters. Northern Pike attained lengths greater than 1 m and weights of up to 10 kg. Walleye attained lengths of up to 70 cm and maximum weights in excess of 5 kg. Intensive angler harvest has severely reduced numbers of both species and large individuals are increasingly rare. A number of new problems exist for these species as a consequence of flow regulation.

Both species spawn in the Medicine and Little Red Deer rivers. The lower reaches of these tributaries are major rearing areas. Historically, seasonally high water in the Red Deer River during June and July backed up the lower reaches of the tributaries creating large areas of deep, slow-flowing, relatively warm water providing a favorable environment for early feeding and growth of these species. Large numbers of catostomid larvae shared this habitat and provided abundant food for the young pike and Walleye which became piscivorous at lengths as short as 30 mm. The annual flooding of these rearing areas no longer occurs, because the reservoir above the dam is being filled during this critical period of early growth of these piscivores. Reduced survivorship and growth may result from this altered rearing habitat.

Access to traditional spawning sites in the lower Raven River is denied to those portions of pike and Walleye populations above the Little Red Deer River, but below the dam. Suitable spawning habitat for pike is scarce in this portion of the Red Deer River. No protection is afforded these or indeed any species of fish attempting to spawn in the tailwaters below the dam.

There is a great deal of open water in this portion of the river for 12 months of the year. The low summer and winter water levels make the fish more accessible to anglers. Increased angling pressure is being applied to an already diminished resource. The altered flow regime results in two detrimental changes for these and other fish species: decreased reproduction and recruitment and increased angler harvest, both of which serve to diminish this once rich fishery.

The Mooneye and Goldeye formerly occurred in good numbers as far upstream as the Raven River and its lower reaches. Both species were present in late May or early June prior to spawning in June (Roberts 1975). These fishes were more abundant during years with higher than average flows at which time they penetrated further upstream in the large tributaries. With regulated flow, early summer water levels are low and only small numbers of Mooneye and Goldeye are found in the lower reaches of the Medicine and Little Red Deer rivers. Both species continue to be abundant in the badlands portion of the Red Deer River downstream from the city of Red Deer.

This represents a loss of two important sports species from the river in the vicinity of the dam. The linear distribution of these species in the Red Deer River is reduced but it is uncertain whether or not the total population within this river is reduced.

Given an understanding of the life histories, within the Red Deer River, of each of the six species discussed it was predictable that flow regulation as it is practiced at present would have deleterious effects on these species. It is important that appropriate life history studies, as opposed to mere inventories, be done prior to the impoundment of rivers. For those species for which basic biology is known it is still important to study their life histories within the stream to be impounded in order to identify potential problems and to provide the basis for mitigative measures where necessary. In the case of the Red Deer River such studies were not undertaken.

While fish stocks are declining no species has been extirpated and rehabilitation of the fish fauna need not be an expensive process, requiring only changes in flow regulation and harvesting practices. A no-fishing zone should be established immediately below the dam to permit fish to spawn unmolested by anglers. Catch limits should be reduced downstream. Small numbers of adult fish that traditionally spawned in the lower Raven River should be introduced to the reservoir where they would eventually contribute to a more diverse fish fauna and consequently a richer fishery. Once established, populations within the reservoir may also contribute to the fishery below the dam. The negative downstream effects resulting from the regulated flow may be overcome by filling the reservoir and allowing the naturally generated discharge above the dam to flow over the spillway such that the reservoir functions much like a natural lake, thus benefitting fish both below and above the dam.

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Author's Address:
Zoology Museum, Dept. of Zoology, University of Alberta, Edmonton, Alberta T6G 2E9.

Editor's Note:

The above article is the text of a talk presented at the Applied Aquatic Workshop at the University of Alberta during February, 1987, and is supplemented by observations as recent as February 28, 1988. The author has fished the Red Deer River and its tributaries since the late 1950's and has conducted life history studies of fishes there since the mid-1970's. Observations and data collected over a period of over 25 years provided the basis for the paper.

Skippers and Butterflies of Bow Valley Provincial Park, Alberta

HAROLD W. PINEL

Bow Valley Provincial Park is located 80 km west of Calgary at the junction of the Kananaskis and Bow Rivers and at the eastern edge of the Rocky Mountains. It is approximately 970 ha in size and the general aspect of the park is a windswept valley with stunted trees. The park is under the influence of a continental type climate with highest average temperatures in July and August and lowest annual temperatures in January and February. Average annual precipitation is below 40 cm with June the wettest month (Strong and Leggat 1981). Situated in a gap between mountains, Bow Valley Provincial Park is often subject to high westerly winds, particularly in spring, which have a profound effect on the vegetation.

The vegetation is essentially a mosaic of open grassland areas and forest. The forest vegetation is primarily coniferous with Lodgepole Pine, Douglas Fir and White Spruce the dominant species. The coniferous forests vary from open- to closed-canopy. Aspen can be found in these coniferous woods, but there are also pure stands of stunted Aspen scattered throughout the park. On sites close to water or where there is impeded drainage, the richest woodlands occur, composed of pure and mixed stands of White Spruce, Balsam Poplar and some Aspen. Patches of grasslands are scattered throughout the park. In some open areas, particularly the exposed areas of the ridge systems, a matted ground cover of Creeping Juniper and Common Bearberry dominates. Further information on the vegetation and flora is available in Wallis and Wershler (1972).

Annotated List

The following list is mainly the result of field observations and collections made by the author on 30 different days from mid-May to the end of August. The vast majority of the records are from 1984 to 1986. Norbert Kondla kindly supplied me with his records from two visits to the park. These records are acknowledged with an NK following the date. Dates for which records are available are written in an abbreviated format by day, month, year (eg. 17/5/85 is 17 May 1985).

Most of the common names are from Pyle (1981). Scientific names generally follow Howe (1975) for genus and Miller and Brown (1981) for species and sub-species.

HESPERIIDAE

Northern Cloudywing (Thorybes pylades) - Rare at the edge of aspen woods; 23/6/85, 5/7/85.
Persius Duskywing (Erynnis persius) - Common at edges of aspen woods and mixed forest and in open fir and pine woods; 25/6/81 NK, 28/5/83, 10/6/84, 17-19/5/85, 8/6/85, 16/6/85, 22-26/6/85, 5-6/7/85, 30/5/86, 1/6/86, 21/6/86.
Dreamy Duskywing (Erynnis icelus) - Fairly common at edges of aspen woods and mixed forest; 2/6/84, 17-19/5/85, 2/6/85, 26/6/85.
Two-Banded Checkered Skipper (Pyrgus ruralis) - Uncommon and local in open fir and pine woods; 2/6/84, 17-19/5/85, 16/6/85, 30/5/86, 1/6/86.
Arctic Skipper (Carterocephalus palaemon) - Rare in poplar woods near fen; 25/6/81 NK.

PAPILIONIDAE

Anise Swallowtail (Papilio zelicaon) - Scarce in grasslands; 28/5/83, 10/6/84, 18/5/85.
Tiger Swallowtail (Papilio glaucus canadensis) Uncommon in poplar woods; 25/6/81 NK, 28/5/83, 2/6/85, 8/6/85, 16/6/85, 22-23/6/85, 25-26/6/85, 5/7/85.

PIERIDAE

Western White (Pieris occidentalis) - Uncommon in grasslands; 25/6/85, 5/7/85, 27/7/85, 2/8/85, 4/8/85, 30/8/85, 1/8/86, 22/8/87.

Cabbage White (Pieris rapae) - Uncommon in grasslands and disturbed areas; 19/5/85, 20/7/85, 27/7/85, 2/8/85, 4/8/85, 30/8/85, 1/8/86.
Northern Marblewing (Euchloe creusa) - Scarce in grasslands; 28/5/83, 18/5/85.
Common Sulphur (Colias philodice eriphyle) - Common in grasslands and disturbed areas; 25/6/81 NK, 10/6/84, 16/6/85, 23/6/85, 26/6/85, 20/7/85, 27/7/85, 2/8/85, 4/8/85, 30/5/86, 1/6/86, 1/8/86.
Queen Alexandra's Sulphur (Colias alexandra astraea) - Fairly common in grasslands and open fir and pine woods; 25/6/81 NK, 22/6/85, 25/6/85, 5-6/7/85, 19-20/7/85, 27/7/85, 2/8/85, 1/8/86.
Pink-edged Sulphur (Colias interior) - Rare in open fir woods; 20/7/85.

Table 1. Differences in Two Montane Ecoregion Butterfly Faunas

Family	Recorded only in Bow Valley Prov. Park	Recorded only in Kootenay Plains [1]
Hesperiidae	Thorybes pylades	Pyrgus centaureae loki
	Erynnis icelus	Hesperia comma manitoba
		Polites draco
Pieridae	Pieris occidentalis	Pieris sisymbrii flavitincta
	Pieris rapae	Euchloe ausonides
	Colias interior	
Nymphalidae	Speyeria atlantis hollandi	Speyeria hydaspe
	Boloria eunomia	Polygonia satyrus
	Boloria bellona	Polygonia gracilis
	Chlosyne palla	
	Phyciodes pascoensis	
	Nymphalis californica	
	Vanessa cardui	
Satyridae	Coenonympha inornata benjamini	Erebia disa
	Erebia discoidalis	Oeneis chryxus
	Oeneis macounii	
	Oeneis jutta ridingiana	

[1] From Kondla (1986).

LYCAENIDAE

Dorcas Copper (*Lycaena dorcas*) - Rare near fen; 20/7/85.

Brown Elfin (*Callophrys augustus iroides*) - Fairly common in open coniferous forests; 17-18/5/85, 30/5/86, 1/6/86.

Hoary Elfin (*Callophrys polios obscurus*) - Common in open coniferous forests; 24/4/80 NK, 28/5/83, 2/6/84, 17-19/5/85, 30/5/86, 1/6/86.

Western Pine Elfin (*Callophrys eryphon*) - Uncommon in pine woods; 17/5/85, 19/5/85, 30/5/86.

Western Tailed Blue (*Everes amyntula albrighti*) - Common in poplar woods; 25/6/81 NK, 4/6/83, 10/6/84, 18/5/85, 2/6/85, 16/6/85, 22-23/6/85, 25-26/6/85, 5-6/7/85, 19-20/7/85, 30/5/86, 1/6/86.

Spring Azure (*Celastrina ladon*) - Common in poplar woods; 24/4/80 NK, 28/5/83, 2/6/84, 17-19/5/85, 2/6/85, 26/6/85, 30/5/86, 1/6/86.

Silvery Blue (*Glaucopsyche lygdamus*) - Abunddant in grasslands, poplar woods, mixed forest and distrubed areas; 25/6/81 NK, 28/5/83, 4/6/83, 2/6/84, 10/6/84, 17-19/5/85, 2/6/85, 8/6/85, 16/6/85, 22-23/6/85, 25-26/6/85, 5/7/85, 30/5/86, 1/6/86.

Northern Blue (*Lycaeides argyrognomon scudderi*) - Common in grasslands and open coniferous woods; 23/6/85, 5-6/7/85, 19-20/7/85, 27/7/85, 2/8/85, 1/8/86, 22/8/87.

Greenish Blue (*Plebejus saepiolus amica*) - Fairly common in grasslands and open poplar woods; 16/6/85, 25-26/6/85, 5-6/7/85, 1/8/86.

Arctic Blue (*Plebejus franklinii megalo*) - Rare, an individual was found on a grassy hillside in open pine woods; 5/7/85.

NYMPHALIDAE

Variegated Fritillary (*Euptoieta claudia*) - Scarce in open coniferous woods; 5-6/7/85, 20/7/85, 1/8/86, 22/8/87.

Atlantis Fritillary (*Speyeria atlantis hollandi*) - Scarce in open coniferous woods; 20/7/85, 27/7/85, 2/8/85.

Beans's Fritillary (*Speyeria atlantis beani*) - Fairly common in poplar woods, mixed woods, and open coniferous forest; 26/6/85, 5-6/7/85, 19-20/7/85, 27/7/85, 2/8/85, 4/8/85, 1/8/86.

Mormon Fritillary (*Speyeria mormonia*) - Uncommon in grass-lands; 19-20/7/85, 27/7/85, 2/8/85.

Bog Fritillary (*Boloria eunomia*) - Rare near fen; 25/6/81 NK.

Meadow Fritillary (*Boloria bellona jenistai*) - Scarce at the edge of aspen woods; 25/6/81, 16/6/85.

Frigga's Fritillary (*Boloria frigga saga*) - Rare, an in-dividual was found near fen; 1/6/86.

Freya's Fritillary (*Boloria freija*) - Fairly common in open coniferous woods; 28/5/83, 18-19/5/85, 30/5/86, 1/6/86.

Northern Checkerspot (*Chlosyne palla*) - Scarce in mixed woods; 5-6/7/85.

Woodland Crescentspot (*Phyciodes pascoensis*) - Common in, and adjacent to, poplar woods; 16/6/85, 22/6/85, 25-26/6/85, 5-6/7/85, 19-20/7/85, 27/7/85, 2/8/85, 4/8/85, 1/8/86.

Field Crescentspot (*Phyciodes campestris*) - Fairly common in poplar woods and open coniferous woods; 25/6/81 NK, 16/6/85, 22-23/6/85, 25-26/6/85, 5-6/7/85, 20/7/85.

Anicia Checkerspot (*Euphydryas anicia*) - Common in grasslands and open coniferous forests; 16/6/85, 25/6/85, 5-6/7/85, 19-20/7/85, 27/7/85, 4/8/85.

Green Comma (*Polygonia faunus rusticus*) - Scarce in poplar woods; 28/5/83, 18/5/85.

California Tortoiseshell (*Nymphalis californica*) - Rare, a worn individual was collected along roadside in mixed woods; 9/7/87.

Mourning Cloak (*Nymphalis antiopa*) - Fairly common in poplar and mixed woods; 25/6/81 NK, 28/5/83, 2/6/84, 10/6/84, 17-19/5/85, 22/6/85, 25-26/6/85, 5/7/85, 2/8/85, 4/8/85, 30/8/85, 1/6/86, 21/6/86, 1/8/86, 22/8/87.

Milbert's Tortoiseshell (*Nymphalis milberti*) - Rare in poplar woods; 24/4/80 NK.

Painted Lady (*Vanessa cardui*) - Rare, an individual observed along roadside; 6/7/85.

Red Admiral (*Vanessa atalanta*) - Rare, seen along roadside in mixed woods; 9/7/87.

White Admiral (*Limenitis arthemis rubrofasciata*) - Common in poplar woods; 25-26/6/85, 5-6/7/85, 19-20/7/85, 9/7/87.

SATYRIDAE

Prairie Ringlet (*Coenonympha inornata benjamini*) - Scarce in grasslands and open disturbed areas; 26/6/85, 5/7/85, 20/7/85.

Dark Wood Nymph (*Cercyonis oetus*) - Fairly common in grass-lands; 19-20/7/85, 27/7/85, 2/8/85, 4/8/85, 1/8/86.

Red-disked Alpine (*Erebia discoidalis*) - Scarce in grasslands; 17-19/5/85.

Common Alpine (*Erebia epipsodea*) - Fairly common in grasslands and open woods; 25/6/81 NK, 10/6/84, 8/6/85, 16/6/85, 22/6/85, 25-26/6/85, 6/7/85, 1/6/86, 21/6/86.

Macoun's Arctic (*Oeneis macounii*) - Fairly common in 1985 in mixed woods and coniferous forest during last half of June; 25/6/81 NK, 16/6/85, 22/6/85, 25-26/6/85. No sightings in 1986.

Uhler's Arctic (*Oeneis uhleri varuna*) - Scarce in grass-lands; 19/5/85, 2/6/85, 16/6/85.

Jutta Arctic (*Oeneis jutta ridingiana*) - Rare, near fen; 10/6/84.

Discussion

A total of 49 species in six families has been documented for Bow Valley Provincial Park. There is a lower percentage of skipper species in the park Rhopaloceran fauna as compared to the provincial fauna, but a higher percentage of Nymphalid and Satyrid species. The study area fauna consists 55% of taxa with a widespread Alberta distribution, 27% with essentially a boreal/cordilleran distribution, 14% with a cordilleran distribution, 2% with a prairie/parkland distribution and 2% with a prairie/cordilleran distribution.

Of the 49 species recorded

for Bow Valley Provincial Park 3 were recorded during April, 19 were recorded during May, 32 during June, 30 during July, and 14 during August. The greatest diversity of species occurs in late June and early July. The most productive areas to observe butterflies in the park are near the small wetlands and along forest edges.

Bow Valley Provincial Park is situated in the Montane Ecoregion as described by Strong and Leggat (1981). This Ecoregion is small in Alberta and occurs as disjunct parcels of land, many of which are associated with the major mountain river valleys. The nearest most similar Montane region to Bow Valley Provincial Park is the Kootenay Plains, 135 km northwest of the study area. The butterfly and skipper fauna of the Kootenay Plains has been documented by Kondla (1986).

The number of skipper and butterfly species recorded for Bow Valley Provincial Park and the Kootenay Plains is 49 and 43, respectively. As well as similar numbers of total species, the areas had 33 species in common. The Papilionidae and Lycaenidae species found in both areas were identical. Table 1 lists the species that were unique to Bow Valley Provincial Park and to the Kootenay Plains. Because of their known ranges in Alberta, four of the Bow Valley species, Thorybes pylades, Pieris rapae, Chlosyne palla and Coenonympha inornata are not to be expected at the Kootenay Plains, and similarly, Erebia disa should not be expected at Bow Valley Provincial Park. The greater species diversity at Bow Valley Provincial Park may be attributable to its greater deciduous woodlands component and its closer proximity to the prairies.

The only other area in a Montane Ecoregion of Alberta to have its butterfly fauna studied is the Indian Grave area. Pinel (1983) recorded 61 species in the Indian Grave study area, as compared to the 49 species for Bow Valley Provincial Park. The same trends exist as in the comparison of Bow Valley Provincial Park to the Kootenay Plains. Indian Grave has a more diverse butterfly fauna because it has a greater deciduous tree and grasslands component than Bow Valley Provincial Park.

Notably absent from Bow Valley Provincial Park are Polites mystic, Parnassius phoebus, Pieris napi, Euchloe ausonides, Lycaena mariposa, Speyeria callippe, Speyeria hydaspe, Boloria titania, Polygonia satyrus and Oeneis chryxus.

Acknowledgements

I would like to thank Norbert Kondla for supplying me with his collection data, and for reviewing the manuscript.

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Author's Address:
1017 - 19 Ave. N.W., Calgary, Alberta T2M 0Z8.

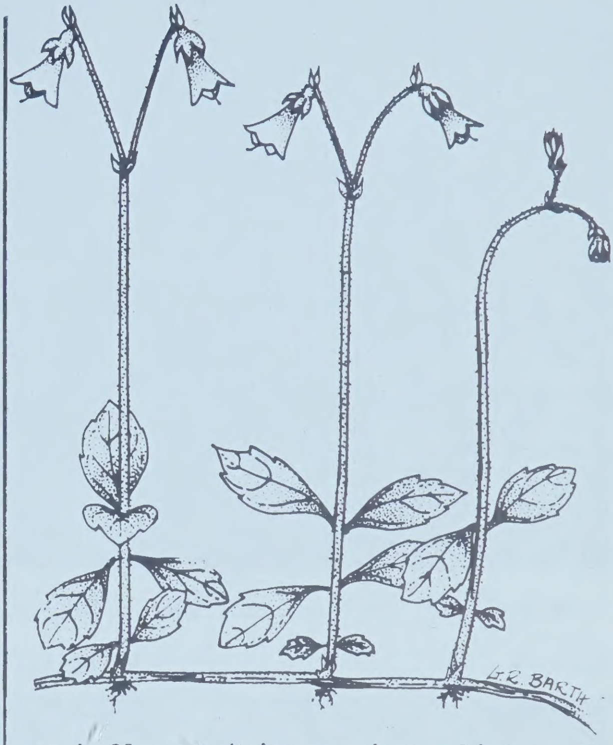
Results of the 1987 May Species Count—Plants in Flower

J. Derek Johnson

Following is a summary of the results of the botanical portion of the 1987 May Species Count, held May 30-31. The method of reporting continues to follow that adopted in 1984 (Johnson 1985).

To put it mildly, the results of the 1987 count were nothing short of amazing, due in large measure to impressive counts from three areas: Whisky Gap, Banff, and Edmonton. I think it fitting that in the centennial year of wildlife conservation in Canada, Wildlife '87, many previous May Count records, particularly those for individual count areas, were shattered. While the 22 reports received is four short of the record, the 16 reporting areas represent an all-time record for the May Count. (For the sake of convenience, the report from Westlock is normally included with the Edmonton results.) The total of 71 participants is the third best in the 12-year history of the count and only six short of the 1983 record of 77. The stunning news is that the 383 species reported in flower far surpass the previous record of 308 set in 1981. The number of species seen in flower would likely have been even higher were it not for the setback that the snowstorm of May 19 administered to plant development in central Alberta.

The areas from which reports were received have been listed in approximate latitudinal order from south to north. Species seen in flower at the F.A.N. Spring Meeting held in Banff May 23-24 have been included with the Banff report for the count weekend. One small change initiated with this report is the listing of the results from Hoople Lake under Entwistle rather than Drayton Valley as in the past. Entwistle is actually the closest settlement to the count area.



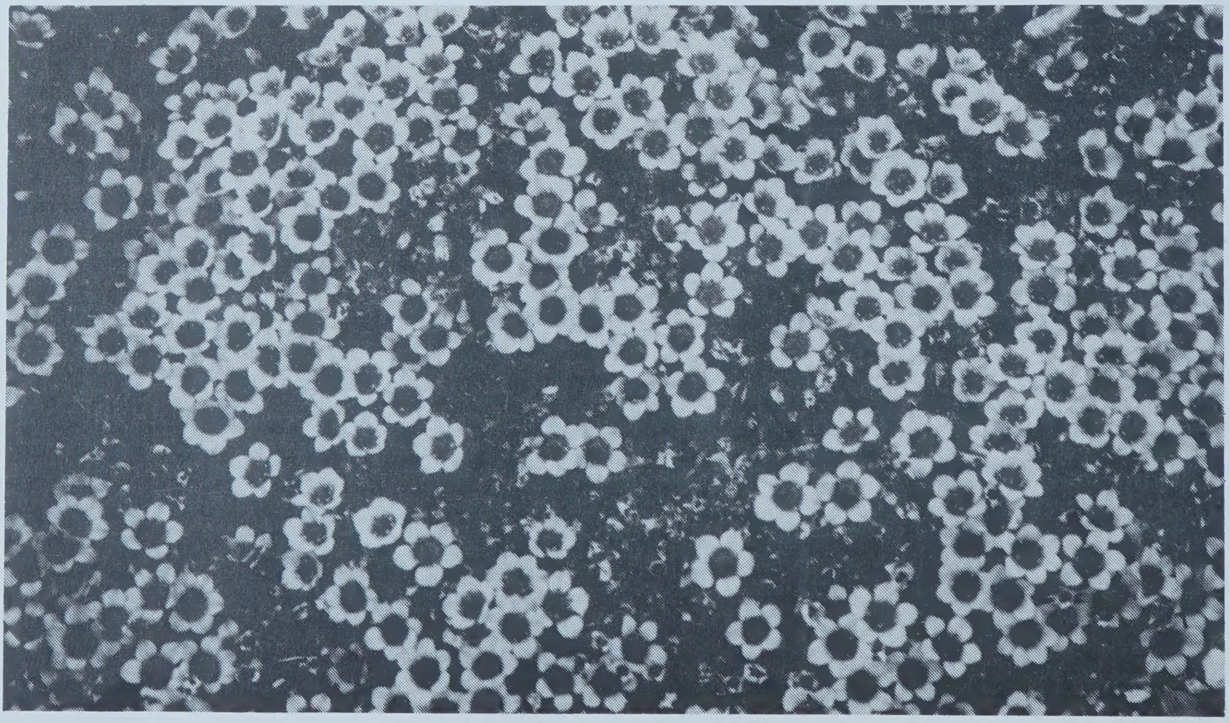
Twinflower (Linnaea borealis).

(Line Art: Gordon Barth)

Nineteen eighty-seven had the earliest spring since the record year of 1981. Plant development was at least one week ahead of average over most of the province, except for the extreme south, which seems to have been ahead of this pace, as evidenced by the advanced development of the grasses and the lack of a mid-May snowstorm to delay development. The weather for the count weekend was generally tolerable, with Saturday being mostly sunny and mild, but participants were dodging scattered rainshowers in a number of areas on Sunday.

Compound Fleabane (*Erigeron compositus*).

Purple Saxifrage (*Saxifraga oppositifolia*). (Photos: J.D. Johnson)



As far as individual counts go, an incredible total of 162 species in flower was reported on the count from the Whisky Gap area near the Montana border, southeast of Cardston. This total far exceeds the previous provincial record of 118 species set by Yamnuska in 1977 and tied by Calgary in 1981. Were it not for the fact that all records from this count, except for a few of the most common spring flowers, were supported by specimens, I would have been highly sceptical of such a high total based on the experience of previous May Counts. In fact, three other counts also surpassed the former provincial record this year. The Yamnuska count reported 119 species, the Banff-Canmore-Wind Ridge count 129 species, and the Edmonton count circle 155 species in flower. An inflated list of sedges contributed greatly to the overall Edmonton total. Twenty species of sedge (Carex) were reported from the Edmonton count circle alone. The provincial total was 32, surpassing the 1985 record of 23. Sixteen species of grasses were reported in flower in 1987, 11 from the Whisky Gap count alone. This total is more than double the previous provincial high for the family. Unlike the sedges, few grass species normally flower before June in our area. Many other families and genera recorded record-high numbers of species. Seven families (Grass, Sedge, Buttercup, Mustard, Rose, Pea, and Composite) accounted for half of the total number of species observed in flower.

The list of species reported in flower for the first time on the 1987 May Count is rather lengthy; many of them come from the count at Whisky Gap. Many of the new species are in the difficult-to-identify groups, including the grass, sedge, and willow families. Most are also later bloomers and would not normally be encountered on the May Count in an average year. The 36 species reported in flower for the first time on the 1987 count include: Alopecurus aequalis (Short-awned Foxtail), A. occidentalis (Alpine Foxtail), Catabrosa aquatica (Brook Grass), Dactylis glomerata (Orchard Grass), Festuca idahoensis (Idaho Fescue), Koeleria macrantha (June Grass), Oryzopsis hymenoides (Indian Rice Grass), Rumex triangulivalvis (Narrow-leaved Dock), Stellaria crassifolia (Fleshy Chickweed), Alyssum alyssoides (Small Alyssum), Conimitella williamsii (Conimitella), Potentilla arguta (White Cinquefoil), Rhus radicans (Poison Ivy), Carum carvi (Caraway), Apocynum medium (Intermediate Dogbane), Linaria dalmatica (Broad-leaved Toad-flax), Erigeron radicatus (Dwarf Fleabane), Hymenopappus filifolius (Tufted Hymenopappus), and Townsendia parryi (Parry's Townsendia) from Whisky Gap; Elymus junceus (Russian Wild Rye) from Valleyview; Carex curta (Short Sedge), C. norvegica (Norway Sedge), Silene pratensis (White Cockle), and Galium labradoricum (Labrador Bedstraw) from Edmonton; Luzula multiflora (Field Wood Rush) from Hoople Lake; Salix brachycarpa (Short-capsuled Willow), S. vestita (Rock Willow), Draba lonchocarpa (Draba), and Potentilla multisecta (Smooth-leaved Cinquefoil) from Yamnuska; Polygonum bistortoides (Western Bistort), and Osmorhiza chilensis (Blunt-fruited Sweet Cicely) from the Cypress Hills; Stellaria calycantha (Northern Chickweed) from Banff-Canmore and Edmonton; Geum macrophyllum (Large-leaved Avens) from Young's Point Provincial Park; Astragalus alpinus (Alpine Milk-vetch) from Banff; Pedicularis groenlandica (Elephant's-head) from Yamnuska and Banff-Canmore; and Veronica americana (American Speedwell) from Whisky Gap, the Cypress Hills, and Valleyview. Specimens were provided for most of the new records from the Yamnuska and Banff-Canmore counts.

The inclusion of Potentilla multisecta and Apocynum medium as new species may be stretching the point a bit. Moss (1983) considers Potentilla multisecta to be a distinct species, but other authorities treat it only as a variety of Potentilla diversifolia (Smooth-leaved Cinquefoil). Apocynum medium (Intermediate Dogbane) is actually a hybrid of A. androsaemifolium (Spreading Dogbane) and A. cannabinum (Indian Hemp) and occurs wherever the parent species grow together. The report of an unidentified Erigeron sp. (Fleabane) from the Cypress Hills could also possibly be Townsendia parryi (Parry's Townsendia) as this species can be confused for a fleabane and it is known to occur in the Cypress Hills (Moss 1983).

Orchard Grass, Russian Wild Rye, Blunt-fruited Sweet Cicely, Dwarf Fleabane, and Tufted Hymenopappus are all rare in Alberta (Moss 1983; Packer and Bradley 1984). Orchard Grass is an introduced species often seeded in orchards and irrigation projects, from which it has escaped (Looman and Best 1979). Its distribution is restricted to the more southern parts of the province. Russian Wild Rye is an introduced forage grass in the prairie region (Looman and Best 1979). I have encountered it along roadsides in Saskatchewan, where it acts as a soil stabilizer, but this is the first time I have seen the species in northern Alberta. Only one clump was found, in a roadside ditch within the town limits of Valleyview. A specimen was collected--the day before the ditch was mowed! Blunt-fruited Sweet Cicely is a species of moist woods (Moss 1983). It occurs in southwestern Alberta from north of the Oldman River to Waterton Park, and in the Cypress Hills (Packer and Bradley 1984). A collected specimen was identified by Beryl Hallworth. Dwarf Fleabane grows on dry ridges and scree slopes to alpine elevations (Moss 1983). Its distribution is interesting in that it occurs sporadically in the front ranges of the mountains from Jasper south, in the extreme southeastern corner of Alberta, and in the Cypress Hills of southwestern Saskatchewan (Moss 1983; Packer and Bradley 1984). The collection from Whisky Gap fills part of a gap in the distribution between the western and eastern records. Tufted Hymenopappus is a species of dry, sandy, or gravelly sites (Packer and Bradley 1984). Its distribution is restricted to the dry prairie areas in the extreme southern portion of the province (Packer and Bradley 1984). Poison Ivy is at best uncommon in Alberta (Moss 1983); to find it in flower before June is quite unusual.

Two other species recorded for the first time on the 1987 count are of interest because of their restricted distribution in Alberta. They are Western Bistort and Conimitella. Western Bistort is a species of mountain meadows and stream banks (Moss 1983). It has a distribution roughly similar to that of Blunt-fruited Sweet Cicely, but it may not occur quite as far north (Moss 1983). Conimitella, a species of open montane slopes, has a distribution quite similar to that of Western Bistort, but it does not occur in the Cypress Hills (Moss 1983).

In addition to the new records, numerous species were reported in 1987 for only the second time in the 12-year history of the May Count; their only other occurrence was in the previous record year of 1981. The report of Senecio pauperculus (Balsam Groundsel) from Buffalo Lake represents the longest time period between successive reports of a species. The only other time that this species was reported in flower was from Seebe, 11 years ago on the 1976 count.

In comparing the results of the 1987 count to those of 1986, one comment springs immediately to mind: "What a difference a year makes!" With spring being a week early this year and a week late last year, and with the count being held about a week later in 1987 than in 1986, some interesting contrasts between the two years are evident. The earlier-flowering species were almost totally absent, while the later-flowering species were well represented in 1987. Choke Cherry was reported in flower from 14 areas in 1987 compared to two in 1986. Of the 16 reporting areas, only Lethbridge and Grande Prairie failed to report Cream-colored Vetchling in flower, compared to no reports in 1986. Northern Bedstraw was reported from five areas in 1987, and Common Yarrow from six. Neither species was reported in flower in 1986. Twinflower and Brown-eyed Susan were reported in flower in 1987 but not in 1986. This year even the author managed to find open flowers of Wild Lily-of-the-Valley, but the species was reported in flower from only Red Deer and Edmonton. Roses were well represented on the 1987 count, being reported from 12 areas. Wild Red Raspberry was reported from eight areas. Neither species is reported as often as this on the count in an average year. Species of clover (*Trifolium*) were reported more frequently on the 1987 count than on any previous count. Bunchberry was reported in flower from seven areas in 1987, compared to one in 1986, and a few observers commented that there actually were a few "real" flowers open! Maybe my admonition about not confusing the colored bracts with the actual flowers is finally getting through. In many areas in 1987, flowers were hard to find for some of the earlier-flowering species such as Crocus Anemone, gooseberries and currants, Saskatoon, Pin Cherry, and Bearberry. In 1986, 11 reports of Canada Buffaloberry were received, compared to only two in 1987, and these came from higher elevations at Banff and Yamnuska. There were 15 reports of the various species of Colt's-foot in 1986, compared to seven in 1987. The spring of 1987 was definitely ahead of average and much earlier than the spring of 1986.

Three-flowered Avens (*Geum triflorum*).

(Photo: P.S. Debnam)

Following is a list of observers, totals (1986 in brackets), and other pertinent remarks for each area.

1. *Whisky Gap*: The 162 (86) species in flower submitted by Barbara and Lynn Sommerfeldt from their ranch and vicinity at Whisky Gap represents the all-time single count and area highs for the May Species Count. Atypically, more grasses than sedges were found in flower in this area. In fact, almost as many sedges were past flowering as were in flower. Two rare species, *Oxytropis lagopus* (Hare-footed Locoweed) and *Castilleja cusickii* (Yellow Paintbrush), first reported in flower from this area last year, were found again this year. Additional early flowering records include: *Urtica dioica* (Stinging Nettle), *Lupinus sericeus* (Flexile Lupine),

Linum rigidum (Yellow Flax), Heracleum lanatum (Cow Parsnip), and Castilleja lutescens (Stiff Yellow Paintbrush). Whisky Gap becomes the second area to report Myosurus minimus (Least Mousetail) and Nasturtium officinale (Water Cress) on the May Count. The lone previous reports of these species have come from Dry Island Buffalo Jump Provincial Park and Banff National Park, respectively.

2. Cypress Hills: Margaret and Anton Walker participated in the fifth consecutive count conducted in this area. They reported a total of 81 (46) species in flower, a record high for the area. This total raises the five-year average for the area to 56. In addition to the new species for the May Count mentioned earlier, early flowering records were noted for Lupinus argenteus (Silvery Lupine), Heracleum lanatum (Cow Parsnip), and Agoseris glauca (False Dandelion).

3. Lethbridge: Pat and Graeme Greenlee reported 46 (42) species in flower from Six Mile Coulee. This is about average for the area. Species of note found in flower earlier than normal were Ranunculus macounii (Macoun's Buttercup), Potentilla pensylvanica (Prairie Cinquefoil), and Heterotheca villosa (Golden Aster).

4. Calgary: Two reports were received from Calgary. Gordon Kerr listed 26 species in flower from Confederation Park. A summary report covering four areas was received from Don Stiles. He recorded 26 species in flower along his East Didsbury Bluebird Trail, 29 species from the Fish Creek-Shannon Terrace area, 44 species from the Bow River area below Queensland, plus six incidental species from Porcupine Valley on Nose Hill. The total number of species for the Calgary area is 68. This is a considerable improvement on the 38 seen in 1986. The reports of Lupinus sericeus (Flexile Lupine) from Nose Hill in Calgary and Whisky Gap represent early flowering records and are actually the first official reports for the May Count, although the species has previously been recorded in flower before the end of May (Hrapko 1983).

5. Yamnuska: This count area beat its own, and the province's, previous high species total by recording 119 (60) species in flower; however, three other count areas (Whisky Gap, Banff-Canmore, and Edmonton) exceeded even this total. Observers on the Yamnuska count included Eleanor, Kevin, and Marjorie Gibney; Diane and Mike McIvor; Eleanor Montour; Bob and Mary Smith; and Eva and Kate Zidek. Additional early or interesting flowering records include Poa alpina (Alpine Blue Grass), Corallorhiza striata (Striped Coralroot), Minuartia rubella (Sandwort), Geum rivale (Purple Avens), Potentilla diversifolia (Smooth-leaved Cinquefoil), Myosotis alpestris (Alpine Forget-me-not), Agoseris glauca (False Dandelion), and Arnica lonchophylla (Spear-leaved Arnica).

6. Banff-Canmore-Wind Ridge: The best-ever count for this area resulted in 129 (59) species being listed in flower. Benoit Aubin, Joyce and Keith Cole, Heather Dempsey, Peter Duck, Diane and Mike McIvor, Bob and Mary Smith, Ena Spalding, Keith Webb, and Eva Zidek were the participants. In addition to some of the same early flowering species encountered on the Yamnuska count, species recorded in flower on the Banff count for the first time in several years include: Polemonium pulcherrimum (Showy Jacob's-ladder), Phacelia sericea (Silky Scorpionweed), and Castilleja miniata (Red Indian Paintbrush). Field trips associated with the F.A.N. Spring Meeting held in Banff on May 23-24 revealed 42 species in flower from the Bow Valley corridor and Johnson Lake. The total number of species recorded in flower for the Banff area is 137.

7. Dry Island Buffalo Jump Provincial Park: Fifty-seven (50) species were recorded in flower from this area by Jim Posey. In the six years that this area has been surveyed, the average number of species seen in flower is 53. An early flowering record is that of Grindelia squarrosa (Gumweed).

8. Red Deer: A summary report submitted by Myrna Pearman included 42 (44) species in flower. This is slightly below the eight-year average for the area. Twelve people took part in the Red Deer count. Beth and Albert Peck covered an area 16 km NW of Red Deer. Freda Bertram reported on an area 8 km W of Red Deer. Sandy Murray traversed an area 3 km SW of Red Deer. The Pine Lake area received attention from Minnie Cunningham. David and Dorothy Dickson did a count 12 km E of Innisfail. The Benalto area was covered by Ken and Linda Larsen. Myrna Pearman did her count at Sylvan Lake. Karen Brassington and Rick Leyland visited the Grassy Lake area.

9. Buffalo Lake-Mirror: The annual survey of the Bird farm and Buffalo Lake Narrows area revealed 69 (44) species in flower. This is the best count ever in the 11 years that this area has been surveyed. The report of Senecio pauperculus (Balsam Groundsel) represents an early flowering record for the species.

10. Edmonton: An outstanding effort by the Edmonton group resulted in the best ever area total for the May Count of 155 (98) species. Fifteen participants reported on seven different areas. Jim Lange recorded 25 (18) species in flower at the Lange farm NW of Westlock. The North Saskatchewan River valley from Whitemud Stables to Hawrelak Park was covered by Donna Clandfield. She reported 33 species in flower. The Winterburn, Whitemud Freeway, and Whitemud Creek areas were surveyed by Derek Johnson. He listed 81 species in flower from these areas, a personal May Count high. The Patricia Ravine, Campbell Bridge, and University of Alberta campus areas revealed 49 species in flower to Patsy Cotterill. Thirty-one (22) species were reported in flower from an acreage S of Hastings Lake and W of Tofield, by Peter, Linda, Eric, and Geoffrey Kershaw, and Elisabeth Beaubien. The Wagner Natural

Area just west of the city was covered by Patsy Cotterill, Terry Friedrich, Alice and Andrew Hendry, Bill Richards, and Liz Stinson. They found 73 (59) species in flower. Derek Johnson and Steve Zoltai recorded 66 species in flower at Elk Island National Park on June 1.

Early flowering records of note for the area include: Nuphar variegatum (Yellow Pond-Lily) from Westlock, Silene pratensis (White Cockle) from S of Hastings Lake, and Geum rivale (Purple Avens) and Galium labradoricum (Labrador Bedstraw) from the Wagner Natural Area.

11. Entwistle: The annual survey of the area surrounding Hoople Lake revealed 61 (52) species in flower. Derek Johnson and Steve Zoltai were the observers. Although this is the third best total in the nine years that the area has been covered, the count was somewhat disappointing. In 1987 the area suffered from a severe infestation of forest tent caterpillars, and aside from making the observation time uncomfortable, it was difficult to identify many shrubby species, particularly those in the rose family, let alone try to find flowers. It is likely because of the activities of the caterpillars that no flowers could be found on Saskatoon or Pin Cherry and very few on Choke Cherry or Prickly Rose.

12. Wolf Creek: A survey of a treed fen along the Wolf Lake Road, SE of Edson, by Derek Johnson, on June 2, encountered 30 species in flower.

13. Valleyview: Three sites in the general Valleyview area were surveyed on May 27. Thirty-seven species were listed in flower from Young's Point Provincial Park on Sturgeon Lake, W of Valleyview. A peatland near Sweathouse Fire Tower, SE of Valleyview, revealed 34 species in flower. The most interesting records from here included: Carex deflexa (Bent Sedge), Luzula rufescens (Wood Rush), and Gaultheria hispidula (Creeping Snowberry). The first two species are rare in Alberta. Incidental observations from the town of Valleyview brought the area total to 62 (47) species in flower. Graham Hillman, Derek Johnson, Bruce Robson, and Ken Segboer were the observers.

14. Grande Prairie: Gavin and Ellen Craig recorded 42 (24) species in flower from their farm between Wembley and Grande Prairie. This is four below the 11-year average for the area. Grande Prairie was one of four areas (the others being Cypress Hills, Banff, and Fort McMurray) to report Calypso bulbosa (Venus-slipper) in flower in 1987. This is a higher than average number.

15. Fort McMurray: This area was back on stream again after a one year absence from the count. Joan Cain, Mike and Marion Horrocks, Erin Hyatt, Amber Mackenzie, Kathy McKenzie, Jean Neilson, Barb Ryan, and Karen Welk recorded 79 species in flower. This is just slightly above the 10-year average for the area of 75. Several species are normally only recorded in flower on the May Count from this northern area. These include: Polygala paucifolia (Fringed Milkwort), Rhamnus alnifolia (Alder-leaved Buckthron), Chamaedaphne calyculata (Leatherleaf), Kalmia polifolia (Pale Laurel), Trientalis borealis (Northern Starflower), and Lonicera caerulea (Blue Fly Honeysuckle).

A complete listing of count results is available without charge from the Curator of Botany, Provincial Museum of Alberta, 12845 - 102 Avenue, Edmonton, Alberta T5M 0M6.

The 1988 count will be held on the weekend of May 28-29.

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Author's Address:
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.

Addendum to 1986 May Species Count (Alta. Nat. 17(1):10-14).

The following additional observations by Ken Walker from the Moss Lake Trail in Elk Island National Park arrived too late for inclusion in the annual report for 1986.

Cornus canadensis (Bunchberry)--one open flower
Antennaria parvifolia (Small-leaved Everlasting)

This raises the number of participants to 62, the total number of species seen in flower in the Edmonton area to 98, and the species total for the province as a whole to 258.

Wolffia arrhiza and *W. columbiana* (Lemnaceae) in Alberta

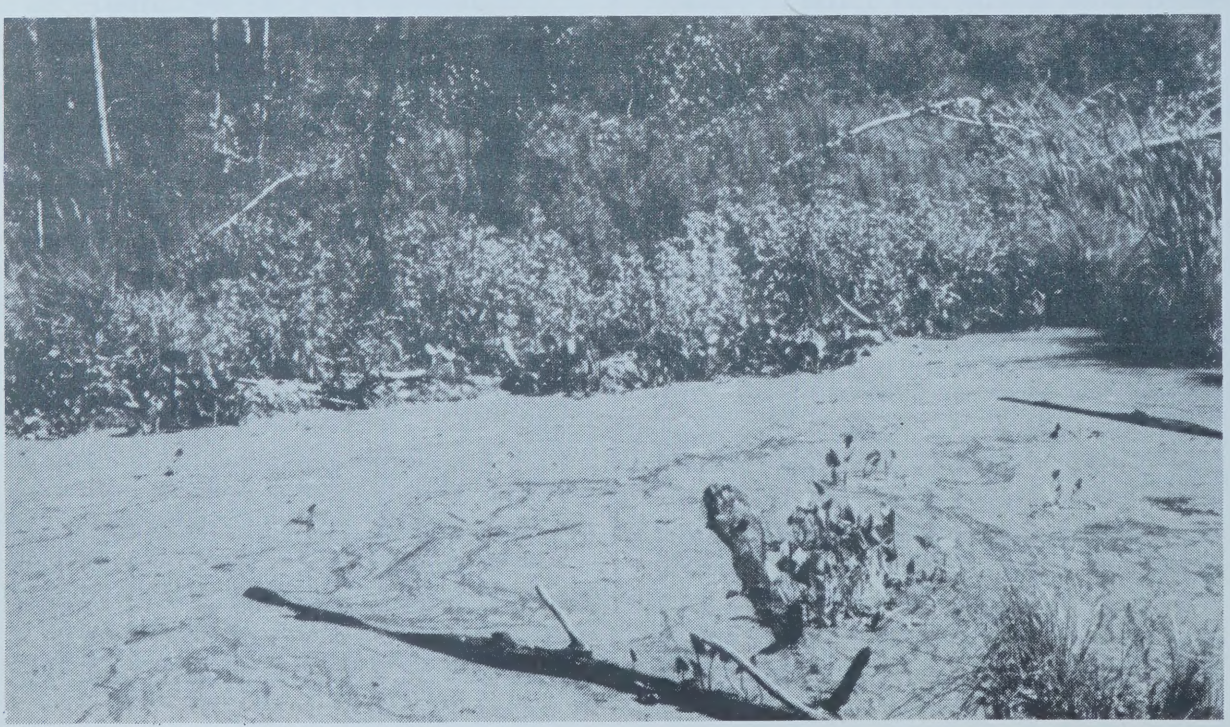
Graham C.D. Griffiths

The genus *Wolffia* belonging to the Lemnaceae (Duckweed family) includes the world's smallest vascular plants, some species having a thallus length of 1 mm or less. Species of this genus may be distinguished from other Lemnaceae by their lack of roots and lack of thallus veins. Like other Lemnaceae, they are used as food by ducks (Martin, Zim and Nelson 1951), hence the English names "ducksmeal" or "water-meal."

The first records of *Wolffia* in the Canadian prairie provinces were published by Cody (1980) (*W. columbiana* on Riding Mountain, Manitoba) and by Looman (1983) (*W. arrhiza* in central Saskatchewan). Looman (1986) subsequently mentioned *W. arrhiza* as also found in Alberta, but did not state the localities.

On July 27, 1987 I discovered and sampled a *Wolffia* population in the Coyote Lake Natural Area (SW28-49-4-W5) in Leduc County, Alberta. The site (elevation 823 m) was a sheltered bay in a large beaverpond with clean calcareous water (electrical conductivity 104 µS/cm, pH 7.9, Ca 17.4 ppm, Mg 4.5 ppm, Na 2.9 ppm, K 2.7 ppm, Cl 2.5 ppm, Fe 1.34 ppm, SO4 4.3 ppm., F 0.12 ppm, nitrogen and phosphates not detected). According to Looman's (1986) suggested definition of trophic levels

Wolffia pond behind beaver dam, Coyote Lake Natural Area.
(Photos: Deirdre E. Griffiths)



in terms of conductivity, this water was (marginally) mesotrophic. Wolffia was the dominant member of the community of floating plants. It was growing together with lesser amounts of Lemna minor (Lesser Duckweed) and Spirodela polyrhiza (Larger Duckweed). Beneath the floating Lemnaceae was a subsurface layer consisting mainly of the liverwort Riccia fluitans (uncommon in Alberta), together with a lesser amount of Lemna trisulca (Ivy-leaved Duckweed). The margins of the pond were fringed by beds of Calla palustris (Water Arum). The accompanying photographs were taken at the original discovery site by Deirdre E. Griffiths.

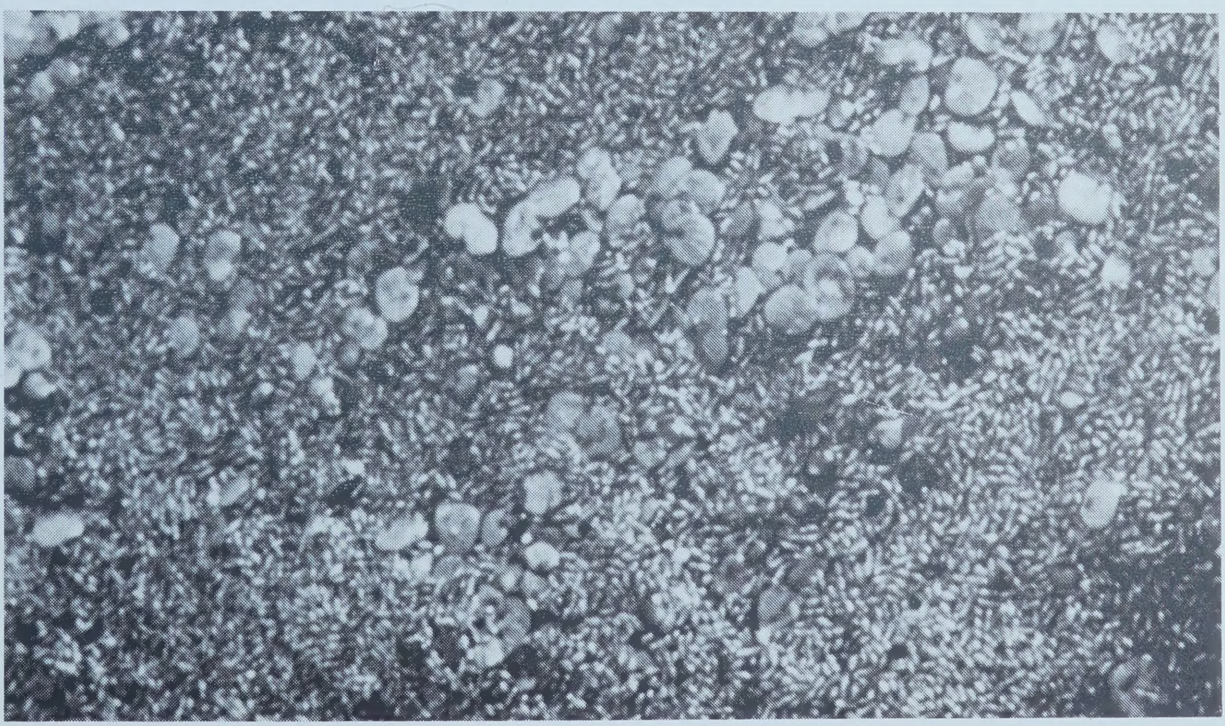
A second visit was made on August 13 in the company of B. Kohli, for the purpose of obtaining additional material for the University of Alberta herbarium. It was found that the Wolffia had multiplied enormously, and a large sample was obtained.

The material from Coyote Lake Natural Area has now been identified by J.G. Packer as Wolffia columbiana, new to Alberta. The identification is based on published descriptions and comparison with material received in exchange from the Biosystematics Research Institute (Ottawa). The two species of Wolffia now known to occur in Alberta can be distinguished (following Looman 1983) as follows:

Upper surface of thallus with 1 to 3 papillae along median line; epidermal cells 40 to 60 um, thin-walled
......W. columbiana Karsten
Upper surface of thallus without papillae; epidermal cells 10 to 16 um, thick-walled
......W. arrhiza (L.) Wimm.

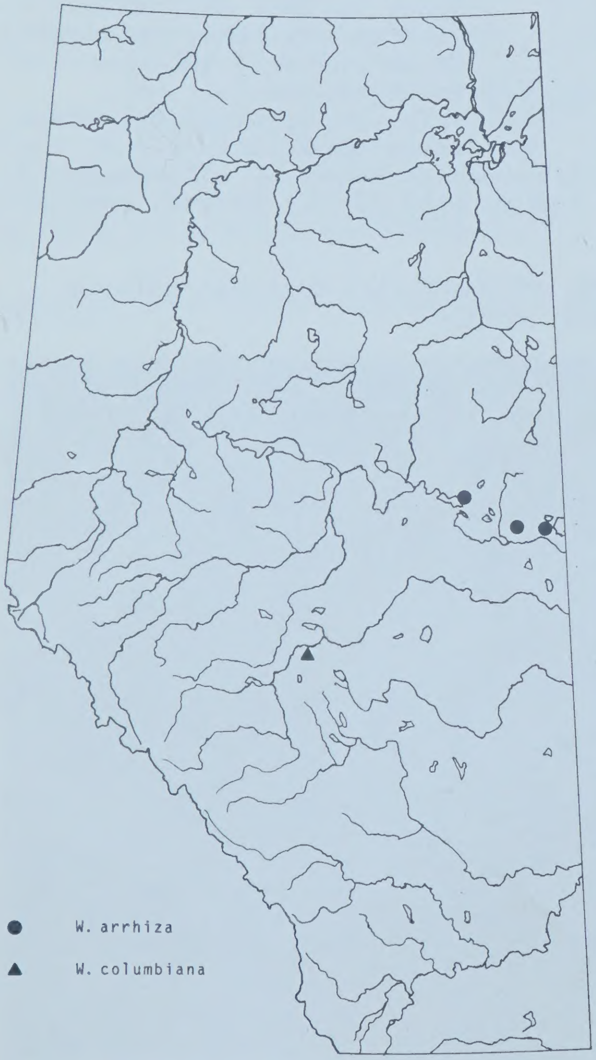
Three ponds in eastern Alberta are known as localities for W. arrhiza (J. Looman, pers.

Close-up of water surface of same pond, showing size contrast between Wolffia columbiana and the larger Lemna minor.



comm.): (1) S of Marie Lake, along access road to campsite; (2) about halfway along access road to Wolf Lake; and (3) near Owl River (N of Lac La Biche). According to the data for Saskatchewan localities published by Looman (1983), *W. arrhiza* is found in eutrophic ponds (over 300 µS/cm) which are relatively rich in chloride and moderate to high in nitrogen. Ponds were *W. columbiana* was collected in Manitoba were also high in nitrogen, and this seems to be standard in published accounts of *Wolffia* occurrence (J. Looman, pers. comm.). That nitrogen was not detected at the Alberta site is thus noteworthy.

Localities for *Wolffia arrhiza* and *W. columbiana* in Alberta.



The accompanying map shows the known Alberta localities for our two species of *Wolffia*. *Wolffia columbiana* is known from North, Central and South America; it is widespread in eastern North America as far north as SW Quebec and Riding Mountain National Park in Manitoba, but with only isolated occurrences in the western United States. *Wolffia arrhiza* is a very widespread Old World species (known from Europe, Asia, Africa and Australia), but reported in the New World only from Saskatchewan and Alberta.

Acknowledgements

I am most grateful to Jan Looman for information on his collections of *Wolffia* in Alberta, and to John G. Packer and Brij Kohli (Department of Botany, University of Alberta) for taxonomic assistance. Chemical water analysis was provided by the Animal Health Division of Alberta Agriculture. Studies of the fauna and flora of the Coyote Lake district have been conducted under contract with Alberta Forestry, Lands and Wildlife (Natural Areas Program).

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Author's Address:
177 Collingwood Cove, 51551 Range Road 212A,
Sherwood Park, Alberta T8G 1B2.

Late Season Flowering of Prairie Crocus in Southwestern Alberta

George W. Scotter and Barbara J. Sommerfeldt

The Prairie Crocus (Anemone patens) is generally considered a harbinger of spring and is usually the first wildflower to appear in southwestern Alberta. Following the extremely mild winter of 1986/87, the first flowers of Prairie Crocus were seen on the Sommerfeldt Ranch at Whisky Gap, Alberta (49°01'N, 113°01'W) in early April and 10% of the plants were in flower by April 15, 50% by April 20 and 90% by April 27, (Phenology Survey of Alberta records sumitted to E. Beaubien), which is about two weeks earlier than normal. The last Prairie Crocus flower of the spring was seen, but only after considerable searching, on a north-facing slope during the May 30 species count of plants in flower (records submitted to J. Derek Johnson). Because of very dry weather the plants, which form dense stands on the ranch, set seed and soon withered.

From early August through September there was a second flowering of the Prairie Crocus in southwestern Alberta. At the Sommerfeldt Ranch about 25 percent of the plants produced flowers. Flowering was much more common on flat areas and south-facing slopes than on north-facing slopes. Except for the smaller size of the flowers, the plants were identical to those of the spring season.

Although we made detailed observations only on the ranch, the late flowering of Prairie Crocus was widespread in southwestern Alberta. For example, Prairie Crocuses were entered in the Cardston Horticultural exhibit on August 8. Other observations were made in the Cardston, Pincher Creek, and Waterton area during August and September (Duane Barrus, Beth Russell, and Julie Winkler - pers. comm.).

The late season flowering of the Prairie Crocus has been observed before, but not nearly to the extent noted in 1987 at the Sommerfeldt Ranch. For example, the

Prairie Crocus

(Anemone patens).

(Photo: J.D. Johnson)

first author noted a few plants flowering at the Russell Ranch, north of Waterton Lakes National Park, in late September of 1981. According to Mrs. Kay Russell, that occasionally occurred during falls with greater than normal precipitation.

C.D. Bird in his annual reports in the Alberta Naturalist (1972-1982) on flowering dates in Alberta, reported Prairie Crocus in flower at times other than the spring season in nine of eleven years. There were from one to eight reports from various locations during each of those nine years, with the peak being in 1977.

Weather may have been important in the late flowering of the Prairie Crocus. April through mid-July was unusually dry. Precipitation at the Summerfeldt ranch from April 1 through July 16 totalled only 2.25 cm, with 13.26 cm from July 17 through August 24. Other portions of the area received even greater amounts of late summer precipitation. The late summer rains may have broken the dormancy of the plants and stimulated the production of a second flush of flowers.

Authors' Addresses:
Canadian Wildlife Service, 4999-98 Avenue,
Edmonton, Alberta T6B 2X3.
Box 272, Cardston, Alberta TOK OKO.

Golden Bean in Waterton Lakes National Park

George W. Scotter

According to Kuijt (1982) and Gadd (1986), Golden Bean (Thermopsis rhombifolia) is not present in Waterton Lakes National Park. Based on my observations there over many years, Golden Bean was included for that national park by Scotter and Flygare (1986), although I did not have specific locations recorded.

On May 15, 1987 I searched several prairie areas, particularly sandy sites and roadsides, for the plant. Plants in full flower were found at six sites as follows: (1) near the Chief Mountain Highway, 2 km south of the junction with Highway 5; (2) on the south side of Highway 5, about 400 m east of the junction with the Chief Mountain Highway; (3) along Highway 5, approximately 1 km west of the park entrance; (4) on the north side of Highway 5, about 150 m east of the Red Rock Road; and (5) two separate clumps west of Knight's Lake.

Specimens were not obtained because a collection permit was required and because the plant in flower is unmistakable. My observations were reported to the late Ken Goble, a long time naturalist in Waterton, and to Duane Barrus, Chief Park Naturalist. Both had made observations of Golden Bean in the same general locations. Barrus had also seen it on different occasions on the eskerine complex north of the Red Rock Road toward the bison paddock.

While Golden Bean is less common in Waterton Lakes National Park than east and north of the park boundary, this perennial herb is well established and should be added to the flora of the national park.

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Author's Address:
Canadian Wildlife Service, 4999-98 Avenue,
Edmonton, Alberta T6B 2X3.

Remains of Coyote Discovered on Glacier in Jasper National Park

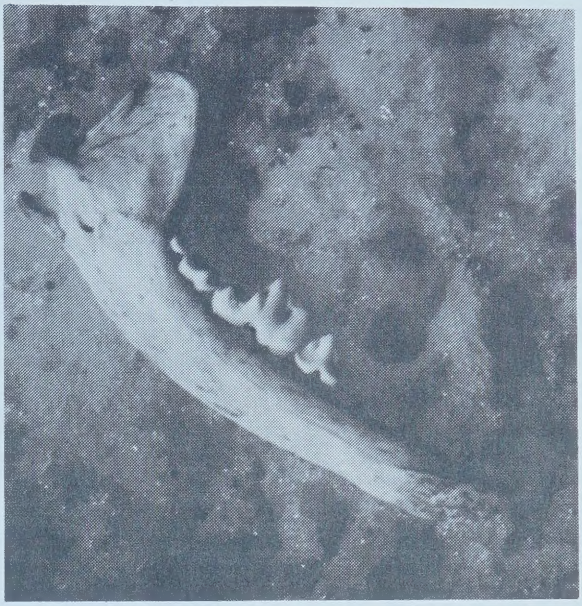
Michael Potter

On 6 September, 1987, at approximately 1400 hours, during the course of a reconnaissance of Dome Glacier in Jasper National Park, the remains of a coyote were discovered on the ice.

Dome Glacier, situated at 52° 13'N, 117°17'W, extends some five km northeastward from an icefall which flows from the Columbia Icefield between Snow Dome (3520 m) and Mt. Kitchener (3505 m). The average width of Dome Glacier is one km; its elevation ranges from 2000 m at the toe to 3200 m at the top of the icefall. The ridges to the north and south of Dome Glacier reach to heights of over 3000 m. The meltwater from Dome Glacier feeds into the Sunwapta River, which runs north to join the Athabasca River.

The evidence of a coyote which had perished on the glacier was found approximately 2.5 km up from the toe, on the narrow tongue of exposed, moraine-free ice. The remains observed included: a portion of the lower right mandible with four teeth attached, vertebrae, several bones approximately 25 cm long (presumably ribs), various other bones, and mummified skin. The remains were scattered over the uneven surface of the glacial ice in a roughly straight line along the direction of flow for a distance of some 10 m. The mandible and one vertebra were collected for identification and further investigation.

This observation provides conclusive evidence that a coyote ventured onto the ice of Dome Glacier, there to perish. This foray into the rugged terrain of the Columbia Icefield region gives indication of the wide-ranging movements of this adaptable, resourceful predator. In this instance, however, the coyote died, presumably after falling into a crevasse while on the slippery surface of a perhaps unfamiliar environment.



Lower right mandible of coyote found on Dome Glacier, Jasper National Park. (Photo: Michael Potter)

It is known that wolverines travel readily over glaciers and icefields; cf. the tracks of one that continued in a straight line over remote, rugged terrain on the Freshfield Icefield in Banff National Park (Clair Israelson, pers. comm.).

The information documented here confirms that the coyote is a species which roams over glaciated terrain as well. It can be speculated that the coyote concerned had been in search of, or pursuit of, prey -- possibly White-tailed Ptarmigan feeding on willows along the edge of the glacier -- and chose to cross the ice in an attempt to get to the other side of the narrow valley in order to continue hunting.

This record supplements that of a dead moose which was found melting out of the ice of the Saskatchewan Glacier in Banff National Park in the 1970's (Bailey and Van Tighem 1987). These sightings illustrate that fauna of the Canadian Rockies do travel -- at least occasionally and in small numbers -- over the frozen fastness of the glaciers and icefields found within the region.

Acknowledgements

I would like to thank Kevin Van Tighem, Assistant Chief Park Interpreter, Jasper National Park, for encouragement and comments on an earlier draft, and John Woods, Chief Park Interpreter, Mt. Revelstoke/Glacier National Parks, for assistance in identification of the mandible recovered.

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Author's Address:
P.O. Box 1393, Banff, Alberta TOL OCO.

Cooper's Hawk Uses an Artificial Nest Platform

Wolfgang Hoffmann

The wire basket, containing a man-made stick nest, was initially put up with the intention of getting Long-eared Owls to use it. It was the first time that any of them had tried it, although they had heard of it being done before. The location was perfect. A semi-open willow draw, flanked on one side by a middle-aged spruce stand that gives way to an aspen and birch forest, snakes through the area. A year ago, a pair of Long-eared Owls had successfully raised a family in those spruce, but now that nest had become ramshackle, even by Long-eared standards. So they proceeded to build another nest of their own for the owls to use.

The group of three birders, Ray Cromie, John Moore, and Trevor Roper got the idea from Hardy Pletz, who had erected a number of such stucco-wire baskets previously -- primarily for Great-horned Owls. He has had some success in getting the owls to use them; the key being the placement of the "new nests" in traditional nesting territories, known from past records.

Hardy got the original plan for the wire baskets from a design shown to him by some of the raptor people with Alberta's Fish and Wildlife Division. They had been using them to encourage prairie-nesting Ferruginous Hawks to establish territories in places that would otherwise remain unused. Recently, Hardy has been getting a supply of these ready-made wire receptacles, in three different sizes to suit the spacing of a particular tree's crotch and the bird species for which it was intended, from the Canadian Wildlife Service's Captive Raptor Breeding Project, located at Wainwright, Alberta.

In its most basic sense, wildlife management is knowing when Nature needs a hand and then going out and providing that help. Sometimes dead trees, containing active nests that are in immediate danger of toppling, are felled. Nestlings are then relocated to a nearby wire basket nest, stapled solidly to a three-way fork of a sturdy live tree. Nests that have disintegrated from the constant pounding they receive, are replaced by the artificial ones after the nestlings have fledged -- ready for use in the following season. Violent wind storms tend to raise havoc with flimsy, exposed stick nests and the trees that support them. Man's aid is needed to replace nests that

Cooper's Hawk young on man-made nest.

(Photo: Hardy Pletz)

have come crashing down. Otherwise the vulnerable young would soon fall prey to any number of opportunistic ground predators which might happen along.

Robert Nero, in his book "The World of the Great Gray Owl," discusses his good fortune concerning the ease with which these trusting owls have accepted his introduced nests. They were located in areas where birds were present, but a marked scarcity of naturally-occurring stick nests characterized the localities.

Each spring there is fierce competition over the occupancy of existing stick nests in prime territory. Great-horned Owls and Red-tailed Hawks are classic adversaries. The owls are not capable of building their own nest, but they do have the edge by being early nesters. Every year I watch their relentless aerial dogfights over territory or over a specific nest site.

One particularly savage battle I recall witnessing a couple of years ago almost ended tragicallly for one of the combatants. It was April 7th. The female horned owl had already been incubating for a full term (one month) and the young were due to hatch at any time. The squatter's rights to the nest were hers. But the pair of red-tails, arriving that day, thought otherwise. They had built this nest the previous year and they wanted it back! Circling slowly overhead, they screamed their defiance at the sitting owl. Then it happened! Suddenly, one hawk folded into a power dive and came in on the helpless owl. The tremendous impact stunned her momentarily, nearly knocking her off the nest platform. One wing dangled over the edge of nest. Slowly she came out of it. Then she flew weakly to the safety of the spruce canopy, obviously hurt. Of the four eggs that were in the nest, only two hatched that day. The other two were cracked and fully-developed embryos were killed by the force of the blow. Later, the red-tails set up housekeeping in a decrepit old nest high in a water-killed spruce, less than 180 m from the owl's nest. Both the owls and the Red-tailed Hawks successfully raised their young that year without further conflict. After that initial air raid, it seemed as if a truce had been declared.

We are left with the impression that available stick nests are in high demand in the wild -- at times limiting factors to population expansion. By providing more nesting sites we can conceivably manipulate and limit competition between species that could otherwise easily share home ranges.

The Long-eared Owls, for whatever reason, did not take up the artificial nest that Ray Cromie et al. had provided. But later in June, the group was delighted to find that the nest was occupied. A female Cooper's Hawk left the nest as they drew near. She cackled defensively from the shadows of the forest as they climbed to inspect the nest. Four pale blue eggs were in the nest! All four young were successfully reared to fledging. It is the first instance of an accipiter accepting a man-made structure for its nest that I have heard of. Sometimes the accipiters will build their own nests from scratch, but more typically you will find them setting up housekeeping on an existing structure. The nest was located about 9.5 km south of Sherwood Park, Alberta during the 1987 season.

Author's Address:
133 Kaskitayo Court, Edmonton, Alberta
T6J 3T3.

Spring Migration Arrival Dates at Camrose, Alberta

Compiled by: Frank Farley &
A.L. Wilk

Editor's Note: The following observations from the files of Frank Farley and A.L. Wilk were submitted by Otto Hohn. Spanning a period from 1909 to 1952, they cover spring migration arrival dates of resident birds in the Camrose area. As Camrose is between Red Deer and Edmonton, the dates may be of particular interest to readers in these two areas, both for comparative and historical reasons.

	Earliest	Average
HORNED LARK	Feb.18/49	Mar. 8
E. STARLING	Mar.20/46	" 26
AMERICAN CROW	" 4/35	" 27
MT. BLUEBIRD	Feb.21/31	" 27
R.-LEGGED HAWK	Mar. 7/36	" 28
CANADA GOOSE	" 10/38	" 30
TREE SPARROW	" 16/26	" 31
MALLARD	" 23/14	Apr. 3
N. HARRIER	" 9/45	" 4
W. MEADOWLARK	" 6/31	" 5
AMERICAN ROBIN	" 22/28	" 7
RED-TAILED HAWK	" 24/15	" 7
PINTAIL	" 25/46	" 8
LAPLAND LONGSPUR	" 25/46	" 8
DARK-EYED JUNCO	" 17/41	" 10
COMMON GOLDENEYE	" 24/26	" 12
R.B. GULL	Apr. 2/34	" 12
AMER. KESTREL	Mar.28/25	" 13
AMER. WIGEON	Apr. 6/46	" 14
SNOW GOOSE	" 3/25	" 15
BALD EAGLE	" 6/28	" 15

BUFFLEHEAD	"	4/25	"	15
TUNDRA SWAN	Mar.	30/18	"	15
RUSTY BLACKBIRD	"	25/46	"	16
SH.-SHINNED HAWK	"	31/25	"	17
RED-W. BLACKBIRD	Apr.	5/31	"	17
SONG SPARROW	"	4/25	"	17
COMMON GRACKLE	"	7/25	"	18
RED-B. MERGANSER	"	16/38	"	18
SWAINSON'S HAWK	"	2/25	"	18
NORTHERN FLICKER	"	2/25	"	19
FRANKLIN'S GULL	"	9/19	"	20
BREWER'S BL.BIRD	"	3/39	"	20
GR. YELLOWLEGS	"	5/41	"	20
GT. BLUE HERON	"	7/27	"	20
LESSER SCAUP	"	11/36	"	20
N. SHOVELER	"	3/25	"	23
GREEN-WINGED TEAL	"	11/37	"	23
B.-HEADED COWBIRD	"	8/25	"	24
SANDHILL CRANE	"	7/15	"	24
EASTERN PHOEBE	"	5/41	"	25
CANVASBACK	"	11/41	"	25
BLUE-WINGED TEAL	"	3/19	"	25
COMMON LOON	"	17/32	"	25
AMERICAN COOT	"	11/41	"	25
VESPER SPARROW	"	23/49	"	26
LESSER YELLOWLEGS	"	15/38	"	27
BONAPARTE'S GULL	"	22/33	"	27
GADWALL	"	17/36	"	27
PURPLE MARTIN	"	16/32	"	28
RED-NECKED GREBE	"	23/38	"	30
COMMON SNIPE	"	16/25	"	30
WILLET	"	17/40	"	30
WATER PIPIT	"	25/27	May	1
BROAD-WINGED HAWK	"	11/41	"	1
MARBLED GODWIT	"	25/34	"	2
TREE SWALLOW	"	16/24	"	3
LOGGERHEAD SHRIKE	"	20/24	"	3
SAY'S PHOEBE	"	20/27	"	4
WESTERN GREBE	"	21/34	"	4
RUBY-CR. KINGLET	"	28/40	"	4
SEMI-PALM. PLOVER	"	27/52	"	5
SEMI-P. SANDPIPER	"	25/34	"	5
SAVANNAH SPARROW	"	25/50	"	5
PURPLE FINCH	"	25/32	"	5
BELTED KINGFISHER	"	23/43	"	6
WHITE-CR. SPARROW	"	26/37	"	6
SOLITARY SANDPIPER	"	28/48	"	7
HORNED GREBE	"	22/26	"	7
SHORT-B. DOWITCHER	"	29/46	"	7
Y.-B. SAPSUCKER	"	23/32	"	8
MYRTLE WARBLER	"	25/39	"	8
ROSS'S GOOSE	May	8/41	"	8*
LEAST SANDPIPER	"	1/37	"	9
OR.-CR. WARBLER	"	1/38	"	9
PECTORAL S.PIPER	"	1/25	"	9
GOLDEN PLOVER	"	1/38	"	10
SORA RAIL	"	1/41	"	10
AMERICAN AVOCET	Apr.	25/34	"	10
RING-NECKED DUCK	May	8/37	"	10
EARED GREBE	Apr.	29/33	"	10
N. PHALAROPE	May	1/46	"	10
FOX SPARROW	Apr.	20/38	"	10
HERMIT THRUSH	"	28/46	"	11
SPOTTED S.PIPER	May	2/31	"	11
WHITE-TH. SPARROW	"	2/31	"	11
BLACK-B. PLOVER	"	1/25	"	12
CLAY-COL. SPARROW	"	3/37	"	12
CHIPPING SPARROW	"	2/48	"	13
WHIMBREL	"	1/38	"	13
AMERICAN BITTERN	Apr.	29/49	"	13
WILS. PHALAROPE	"	28/37	"	14
SWAINSON'S THR.	May	8/37	"	14
BARN SWALLOW	"	3/48	"	14
CH.-SIDED WARBLER	"	14/35	"	14*
Y.-H. BLACKBIRD	Apr.	30/25	"	14
YELLOW WARBLER	"	8/26	"	14
SOLITARY VIREO	"	11/33	"	15
CANADA WARBLER	"	16/36	"	16*
LINCOLN'S SPARROW	"	3/38	"	16
CAPE MAY WARBLER	"	16/36	"	16
HOUSE WREN	"	9/26	"	16
SPRAGUE'S PIPIT	"	2/39	"	18
LEAST FLYCATCHER	"	3/35	"	18
MOURNING DOVE	"	11/52	"	18
VEERY	"	3/31	"	19
BLACK TERN	"	11/36	"	19
PHIL. VIREO	"	15/36	"	19
BROWN THRASHER	"	17/41	"	19
UPLAND SANDPIPER	"	12/15	"	20
BANK SWALLOW	"	7/36	"	20
LE CONTE'S SPARROW	"	7/39	"	20
W. WOOD PEWEE	"	11/26	"	20
OVENBIRD	"	15/36	"	20
EASTERN KINGBIRD	"	10/25	"	20
MAGNOLIA WARBLER	"	16/36	"	20
NORTHERN ORIOLE	"	8/26	"	20
BLACKPOLL WARBLER	"	16/36	"	20
B. & WH. WARBLER	"	11/22	"	21
TENNESSEE WARBLER	"	8/26	"	22
WARBLING VIREO	"	12/25	"	22
ROSE-BR. GROSBEAK	"	13/26	"	24
ALDER FLYCATCHER	"	23/23	"	25
COMMON Y.THROAT	"	20/23	"	25
RED-EYED VIREO	"	14/25	"	26
GRAY CATBIRD	"	16/26	"	27
COMMON NIGHTHAWK	"	22/09	"	27
AMER. GOLDFINCH	"	22/24	"	28
CEDAR WAXWING	"	25/23	June	4

* only one record

Submitted by:
Otto Hohn, 11511 - 78th Avenue,
Edmonton, Alberta T7G ON4.

F.A.N. NEWS

Alberta Bird Atlas Project

KEY ACHIEVEMENTS - 1987

- SUCCESSFUL FIELD SEASON

Atlassers	239
Casual Observers	40-45
Helpers	100 +
Other Volunteers	100
	500 +
Hours of Atlassing	3500-4500
Assigned Priority Squares	239
"Casual" Squares	?

- BROADLY BASED SUPPORT/RECOGNITION

F.A.N. Organization
Clubs
Public/Volunteers
Key Government Agencies
Associations
Foundation(s)
Corporations
Media
National/International

- ACCEPTED AS A CREDIBLE PROJECT

PROGRESS OF THE PROJECT - 1987

Developed and implemented 5-year Strategic Plan.
First Year Action Plan developed and implemented.

ORGANIZATION

Recruitment strategy developed and implemented.
- Regional Coordinators/Atlassers

Need for teams identified and volunteers recruited.
Project materials developed and distributed.
Training sessions held.
Technical Committee Report.
- automated data
- management system

ADMINISTRATION

Financial control/reporting - functioning.
Record keeping - functioning.
Supervision of volunteer teams.
Planted the idea for designated Provincial Atlas Day.

PROJECT SUPPORT

Minister's and senior department officials informed and supportive.
Key organizations informed and supportive.
Bird identification courses listed and publicized.
Two newsletters issued.
Widespread media coverage.

FUND RAISING

Strategy developed and implemented.
Volunteer team recruited.
Fund raising approvals applied for and received.
Promotion materials developed - all (execpt 2) were printed.
Campaign launched.
Discussions with corporations in progress.
Some contributions and service-in-kind received.

PUBLICATIONS

Ad hoc committee to recommend on atlas format and substance.
Discussions held with publishers.
Offer for publishing - advice received.

OUTLOOK FOR 1988

CONTINUING FROM 1987

- Finalize plans for awards and recognition program.
- Finalize "rare birds" procedures.
- Finalize computer arrangements and initiate automated data analyses.
- Finalize and submit proposal for a designated Bird Atlas Day.
- Prepare and submit to management committee a proposal on atlas format and substance.
- Complete the manual data summaries.
- Follow up on atlasser recruitment plans.
- Continue project promotion.
- Continue and complete fund raising campaign.
- Prepare newsletters.

NEW ACTIVITIES IN 1988

- Plan and organize remote areas program and initiate advertising.
- Evaluate atlassing needs in and adjacent to provincial parks and recreation areas.
- Plan, organize and hold 10 regional workshops for atlassers.
- Evaluate progress of the project and any needs for solutions to problems.
- Finalize and print manual and handbook.
- Prepare 1988 work plan.
- Arrange for booths/displays and media as appropriate.

ACKNOWLEDGEMENTS

Atlassers, Regional Coordinators, Technical Committee, Operations Committee, Ad Hoc Committee - Atlas Format, Editor, Fundraising Team, Management Committee, AF & W, PMA, FAN, Presentation-Book Team, Field Data Summary Team, Alberta Vocational School, Canadian Petroleum Association, Coal Association of Canada, Ducks Unlimited, Alberta Fish & Game Association, and many others.

Jack R. Clements

Finance Committee Report

The major activity of the Finance Committee during 1987 was the submission of a number of grant applications on behalf of the Federation. This required more than the normal amount of effort in 1987. Because of the very tight monetary policies of the Alberta Government (our major funder), we put a good deal of time into upgrading the format of our 3 year plan, so as to better display the full range of our activities, progress, and plans. This perhaps contributed to our receiving a slightly larger grant from Alberta Recreation and Parks than in 1986, in spite of the bleak economic climate.

Our other funding efforts were less successful. We made a major request to the Recreation, Parks and Wildlife Foundation to fund a full-time Executive Assistant at a realistic salary, but received only $5,000 toward that position. This meant that F.A.N. was again hard-pressed to keep up with its administrative work. Our part-time Executive Assistant, Celeste Ference, resigned in June and we were without such a person until September. At that time, we obtained a Federal Job Development grant which enabled us to hire Rose Kinequon, but she was able to stay in the position only until the end of the calendar year. The position was restaffed in early February by Ann Stefura.

Our grant requests to Alberta Culture were even more disappointing: both of the grant programs we had previously been funded from were terminated in 1987! In concrete terms, this left us with about $6,000 less grant income than we have enjoyed in recent years. In previous years we had made use of this funding to offset about half of the cost of printing the A.N. and to provide travel assistance to directors coming to Board meetings. Partly as a result of this funding calamity, great efforts were made to reduce A.N. production costs during the year, the most important being "in house" printing which has reduced printing costs substantially. Also, grants for directors' travel expenses were, regretfully, ended in the absence of funds for the purpose.

The blow of losing our Alberta Culture funding was softened somewhat when we were encouraged to re-submit our applications to the Alberta Historical Resources Foundation. Although we were unsuccessful in getting any money for the 1986 expenses originally applied for, we did fortunately receive a grant of $4,182 to partially defray 1987 printing costs. This grant was confirmed late in the calendar year and will show up in our 1988 financial statement. It is important to note that this funding is NOT ongoing and will not be repeated in the future. Therefore, we will be forced to seriously consider new funding for the A.N. during 1988.

On a more positive note, F.A.N.'s major project, the Alberta Bird Atlas, got off to a very auspicious start in 1987. Although the majority of Bird Atlas funding does not show up in our financial statements, the Finance Committee has been responsible for successful funding requests to the R.P.W. Foundation which resulted in $42,000 for the first year of operation of the Atlas and a like amount for 1988.

In comparing actual receipts and disbursements in 1987 with projections from a year ago, major discrepancies are apparent. On the receipts side the discrepancy between prediction and actuality was caused mostly by the unsuccessful bid for executive assistant funding from the R.P.W. Foundation and the complete loss of Alberta Culture funding. Also, income from memberships was very optimistically predicted, based on F.A.N.'s goal of increasing membership to 1000 during the year. Expenditures were similarly reduced from their projected levels. Much less was spent on office assistance, and considerable savings in the production of the A.N. were effected. However, the final result was a deficit of about $6,500 for the year. Although our bank balance was able to absorb this loss for one year, it must be avoided in the future. Our proposed budget for 1988, unfortunately, provides minimal funding for an Executive Assistant. We will have to carefully assess our needs for a full-time individual in this role, and if it is deemed essential, we will have to find major new sources of funds for the purpose.

Dave Cuthiell

Federal-Provincial Wildlife Conference Report

Tuktoyaktuk - the place to hunt caribou - at first seems an inappropriate place for the 51st Federal-Provincial/Territorial Conference. It is difficult and expensive to reach, spring weather is notoriously undependable, and the community is small and has limited resources for handling large numbers of visitors. I was lucky to be able to attend and represent F.A.N.; for the first time in a few years I was back in the north doing waterfowl surveys, and was able to attend most of the conference, after my last survey which terminated near Tuktoyaktuk. Last minute arrangements for accommodation were made by the territorial biologists organizing the meeting, for which I was grateful. Spring weather was superb during the symposium, and except for some problems with ice conditions affecting local trips, registrants were able to take walks and enjoy the spring awakening in the land of 24-hour sunlight. Although the community is small, the facilities of the Northern Transportation Company Limited and the local school were quite suitable for handling the large number of registrants (110+). The genuine hospitality and friendliness of local participants in the social and workshop activities made the meeting one of the most enjoyable that many delegates had attended. Whether it was one of the most productive and useful will be revealed in delegates' subsequent actions, which hopefully will reflect the cooperative spirit espoused by them at the meeting. Many of those who attended were directors or section heads of wildlife departments, members of parliament and executive directors of non-governmental organizations, and clearly these are the people who have to cooperate to achieve wildlife conservation objectives.

The symposium was organized as a series of workshop sessions; the overall theme was Wildlife: Agenda for Tomorrow, but the issues of wildlife conservation and management have become so complex that it is necessary to look at future plans under a variety of topics. To fully appreciate the scope of the discussions that took place, I will describe the workshop that I took part in and also the titles of other workshops and key recommendations that developed.

Dr. Peter Pearse, a professor of Forestry and Economics at U.B.C., led Workshop 9 on "Participation in Resolving Issues," I felt that this would be a useful workshop to participate in, because of the polarized nature that many issues on wildlife conservation have taken in Alberta. Other participants included directors or senior managers of: wildlife departments in Manitoba, Prince Edward Island, Quebec and Alberta; Canadian Wildlife Service, Western and Northern Region; and Ducks Unlimited. In looking at the range of possibilities for participation, we developed a list of categories that would tie together a number of related opportunities and past attempts at participation. Public information, co-management priorities, delegation of management responsibility, and consultation priorities were mutually agreed upon categories.

Each of these categories were similar in one regard, i.e. each has both formal and informal avenues for implementation. For example, in getting information to the public about wildlife conservation, the use of seminars, talks to specific groups and to students, and the publication of compendia of facts are the more informal approaches, while the development and promotion of curricula such as that in "Project Wild" is more formal. In our discussion, we stressed the necessity to move away from simply presenting raw data to the public and moving towards more comprehensive integration of ecological and wildlife information into policies and curricula.

Consultation opportunities identified included informal public meetings and formal policy advisory bodies. The comment arose that policy advice councils do not work because they defer accountability and can be used as an excuse to hide behind; I believe that this is partially true of the Alberta Fish and Wildlife Advisory Council, and has led to much criticism of that formal body in the past year. One alternative at present appears to be to simply decide not to participate; however, access to important information would be diminished, which could be a worse situation. A far better suggested approach to the formal consultation was specific resource consultative bodies, but these must be given high priority for consideration of their recommendations; they must be comprised of representatives having a clear constituency; and there must be mutual confidence between those providing the expertise and those implementing the decisions.

Under the category of delegation of management responsibility, a number of examples of successful models, informal and formal, were considered. On Prince Edward Island, the informal role of the Island Nature Trust in management and allocation of land use was considered particularly appropriate. It was clear from the discussion on formal systems that directors of wildlife considered game farming a practical tool for enhancing commercial utilization of wildlife, and private rather than public responsibility for maintaining wildlife populations. A use-oriented approach to wildlife management overwhelmingly predominates in government departments throughout Canada. It appears that the message that in some cases non-use is the best use of wildlife populations is not striking home!

A review of the other workshop

titles gives an idea of the current complexity of wildlife conservation and management. These titles included; examining wildlife values, accommodating demands for wildlife, managing Canadian endangered wildlife, environmental contaminants, national and international cooperative agreements, piecing together the economic picture, new approaches and initiatives for wildlife support, and ecological reserves or the refuge approach. The recommendations of these various workshops will be incorporated into a publication entitled "Wildlife 87: An agenda for tomorrow" to be considered for adoption at the 1988 Conference. This could be an important document, as it should reflect the intended approach towards wildlife conservation for the future.

A number of recommendations were formally adopted by the 51st Conference, as a result of several committees and resolutions from the floor. These included the following:

Humane Trapping Resolution - that the conference support the establishment of national minimum trapper education course standards, mandatory trapper education for first time trappers and humane trapping regulations.

This conference supports a "forest" sector rather than wood fibre sector approach to be incorporated into the current draft national forest sector strategy which is being developed. A forest sector approach would incorporate wildlife interests to a much greater extent than the wood sector approach, thus the Wildlife Conference will request the Canadian Forestry Service allow greater participation in the development of the draft strategy. (Note: Wildlife Habitat Canada was in fact able to influence a revision of the strategy document so that wildlife are now considered more suitably in the final document.)

The recommended theme for the 1988 Federal-Provincial/Territorial Conference, to be held in Victoria, June 14-17, is "Sustainable Development," and the supporting components of the Brundtland Commission and the CCREM (Canadian Conference of Resource and Environmental Ministers) task force on sustainable development will form the basis for the topic.

A review of the Wildlife Pol-Policy in Canada is due, as it is 5 years since adoption of the policy in 1982 by CCREM. This review is recommended to be submitted to the 1988 Conference, and should include definitions for the terms "Game Farming" and "Game Ranching."

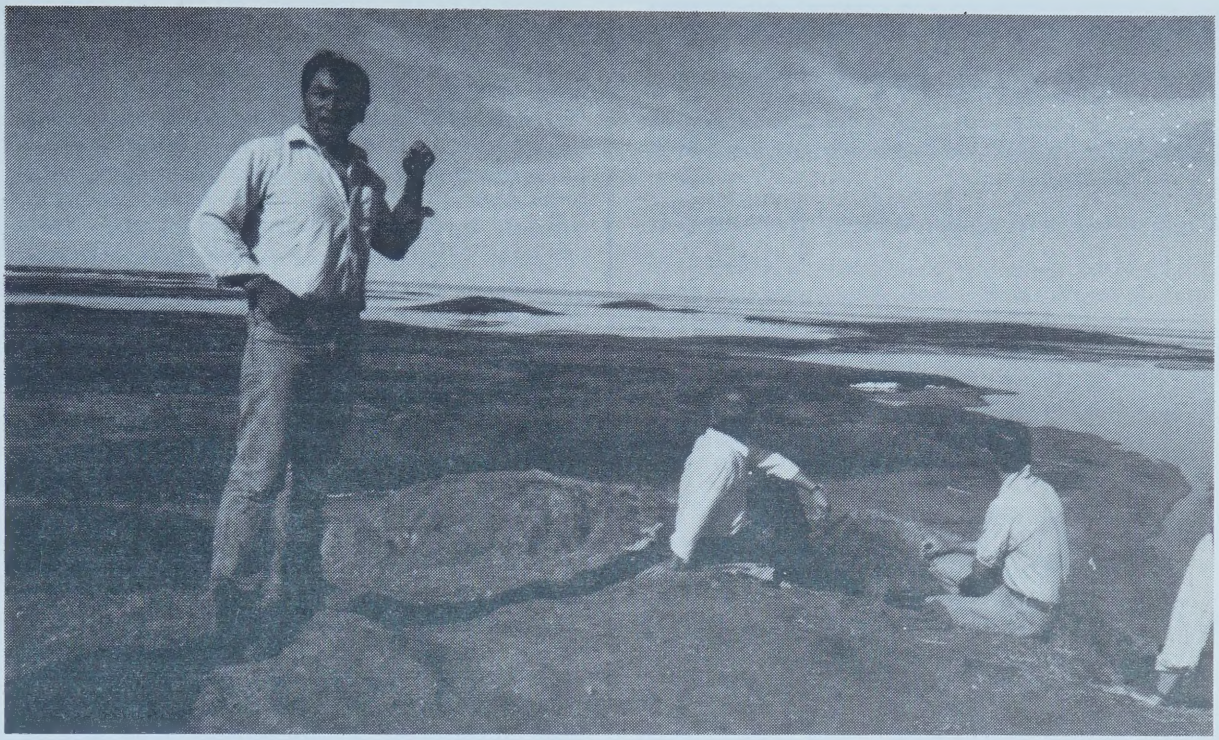
The importance of the Porcupine Caribou herd was emphasized in a recommendation that both Canada and the United States should continue to take appropriate measures to ensure conservation of this herd through effective population and habitat management measures.

Support should be given to developing advanced techniques for modelling of large-scale ecological systems to take advantage of new remote sensing technology and available data bases, to assist in predicting the impact of development projects and wildlife programs, especially in the Canadian north.

The Conference recognizes the vital role of aboriginal people in wildlife management and therefore encourages the full participation of native organizations in future conferences.

Priority should be given to experimentation with new licensing and co-management arrangements that assign rights and responsibilities for managing wildlife resources to users or others under general governmental supervision. I BELIEVE THIS PARTICULAR RECOMMENDATION MAY LEAD TO GREATER PROMOTION OF GAME RANCHING AND TO THE LOSS OF THE CURRENTLY RECOGNIZED PUBLIC OWNERSHIP OF WILDLIFE.

Recommended that Canada and the United States negotiate a protocol soon to enable a reasonable legal harvest of migratory birds by



Pingos in the Tuktoyaktuk area. (Photo: David M. Ealey)

northerners. Current regulations make the majority of the traditional harvest of waterfowl in the north illegal, and prevent northerners from having the same legal access to wildlife enjoyed by hunters in southern Canada and the United States.

A major benefit of attending such conferences, even though our organization is a relatively small player in the wildlife conservation field, is the opportunity to put forward the points-of-view of non-consumptive use of wildlife and the inherent right to wildlife to exist, hopefully in some places with a minimum of intrusion by man. There is also the opportunity to hear at first hand the points-of-view of others interested in wildlife. In particular, I enjoyed being able to talk with several natives of the Tuk area who promote the continued use of wildlife as part of their traditional attachment to the land. One native, Randy Pokiak, led our group on a tour of Tuktoyaktuk and a visit to a nearby pingo. His knowledge of the land, and of the interplay of traditional wildlife use and survival, enhanced my and others' appreciation of this place where one "comes to hunt caribou."

David M. Ealey

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CLUB NEWS

Calgary Field Naturalists' Society

A very busy and successful year commenced with C.F.N.S. hosting the F.A.N. Annual General Meeting and participating in the Urban Natural Areas Workshop.

General meetings were well attended and featured excellent speakers.

January--Dr. Wayne Lynch author of "Married to the Wind - A Study of the Prairie Grasslands" gave an illustrated lecture.

February--Brent Van Hooft of the Devonian Conservation and Research Center gave an illustrated lecture on its operation and research programs.

March--Brian Keating, Curator of Education at the Calgary Zoo, presented "Searching for the Mountain Gorilla of Rwanda."

April--Dr. W.F. Wilson of the Department of Astrophysics at the University of Calgary lectured on the "Birth and Death of Stars" relating to the super nova seen in the southern hemisphere.

May--John Woods, Project Research Associate in a long term study of elk in Banff National Park, spoke on "Banff Elk--Past, Present and Future."

September--Richard Lang, Regional Resource Planner for Alberta Provincial Parks, spoke on "The Search for the Black-footed Ferret."

October--Dr. Lawrence Harder: "The Diversity and Life of Bees."

November--Dr. Len Hills: "Tertiary Floras of the Canadian Arctic."

December--Annual Christmas Quiz and Dave Elphinstone: "A Natural History Tour into the southwestern U.S."

Our keen and dedicated birders made our Christmas Bird Count an unqualified success with 69 species recorded.

The Bird Study Group continued the study and identification of birds and their habitats. Varied programs provided education and pleasure to members. Some of the topics studied were: Edge Habitats, Osprey Nesting Site Projects, Identification of Waterfowl, Plovers of Alberta, Alberta Bird Atlas Project, Owls and Hawks, Birds of Winter, and Backyard Bird Watching. Bird Study Walks commenced in April and continued through September on a once weekly basis. These proved to be extremely popular as they afforded aspiring birders an opportunity to practice.

The Botany Study Group met once a week for field trip study, May through September.

The Mushroom Study Group undertook weekly field trips to points outside Calgary, visiting one location monthly to get some idea of the temporal changes in the muchroom flora over the growing season.

The Natural Areas Group decided to write a book on Nose Hill as a Wildlife '87 Conservation Centennial project, with a publishing date of April 1988. Nose Hill is being threatened by developers. It is one of the last prairie habitats left within the city limits. It is hoped that the book will help explain to the average Calgarian why preserving this area is so important. Several field trips to various natural areas took place over the summer.

A publication by C.F.N.S. member Olga Droppo, "The Berries of Alberta," will be ready for publication in the spring of 1988.

C.F.N.S. has commenced work on two Wildlife '87 Centennial projects: (1) a feasibility study for the building of a Nature Centre in Calgary; and (2) a bird holding facility for injured and orphaned birds at Inglewood Bird Sanctuary.

C.F.N.S. members attended meetings to express club concerns on several issues.

Don Stiles

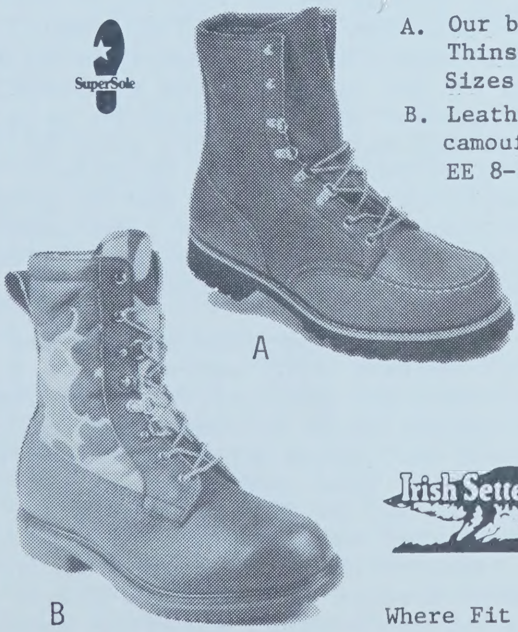
Edmonton Natural History Club

- -Club continues to hold some of its regular monthly meetings jointly with the Canadian Parks and Wilderness Society.
- -Club again cosponsoring a series of five "Outdoor Adventure Films" with Edmonton Bird Club and the Provincial Museum.
- -Marg Reine presented with 13th annual Loran L. Goulden Memorial Award at the Club's A.G.M. for her tireless efforts on behalf of the Clifford E. Lee Nature Sanctuary.
- -active field trip schedule with over 30 trips during the summer.
- -Bird Study Group started in January; meets at the Provincial Museum on the 4th Tuesday of the month except for the summer months.
- -in cooperation with Beaverhill Bird Observatory two students hired for the summer to lead tours at Beaverhill Lake for the public.
- -two new groups, the Strathcona Natural History Group and the Wildlands and Wildlife Club (University of Alberta), formed during the year and are now affiliates of the E.N.H.C.
- -Club has encouraged and provided funding for Junior Field Naturalists and Junior Conservationists, two youth programs at the John Janzen Nature Centre.
- -extremely successful and record-breaking Christmas Bird Count on December 27.

J. Derek Johnson

Edmonton Bird Club

At the annual general meeting in September, Jim Lange and Jim Allen were re-elected as President and Vice-president, respectively. The Treasurer is now Jim Goodwin, replacing Jack Park who ably filled that role for many years. Secretary is Carolyn Beacom, Field Secretary is Winnie Horn, and F.A.N. Directors are Margot Hervieux and Jim Goodwin.



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So far this year, the E.B.C. held two slide nights with members relating tales of their summer birding activities and showing tricky slides of hard-to-identify birds. Lyn Hancock, the well-known author of popular natural history books, was invited to our November meeting, at which she gave a spirited slide talk describing her recent trip around North America. Her book about this trip "Looking For The Wild: A 30,000 Mile Naturalist's Journey Around North America" recently won the Francis J. Kortright Award for Excellence in Outdoor Writing.

The E.B.C., along with the Edmonton Natural History Club, participated in the "Birds of Christmas" presentation at the Provincial Museum in December. This public meeting was designed to introduce Christmas Bird Counts to as many people as possible, and was very effective as a booster for participants - Edmonton had over 1200 people watching birds on its bird count! While many of these were feeder-watchers, there's a good chance that out of some of these novices, the Edmonton birding community will gain some real enthusiasts.

At the annual banquet held in January, 1988, the Edmonton Bird Club Award was given to George Evans in recognition of his long-term commitment to the club and Edmonton-area birding.

The death of Robert Lister, co-founder of the Edmonton Bird Club, and a major figure in the growth and development of birding in the Edmonton area, marks the end of an era. His recent passing in Toronto (January 22) does not mark the end of his influence, however. There are many in the Edmonton naturalist community who learned much from him and who benefited from his generous encouragement. Surely Bob's spirit will continue to be felt by all of these, as they encourage others to study and enjoy birds.

David M. Ealey

Lethbridge Naturalists' Society

1987 Membership-90.

Wildlife 87:

-Display placed in the Galt Museum in Lethbridge for the year, changes made at several intervals during the year.

-Police Lake Wetland, south of Cardston, is under consideration by the Club for adoption as a natural area.

Environmental Activities:

-Open house sessions for discussing Ross Lake and Upper Bob Creek as candidate ecological reserves attended by 2 Club representatives on behalf of F.A.N.

-Club has representation on a committee formed to decide the future use of Stirling Lake, southeast of Lethbridge. Currently, it has been drained, and the adjacent Town of Stirling wishes to construct a sewage lagoon on the site. It was formerly a superb natural wetland habitat, and naturalists are lobbying to have it re-flooded and retained as a natural habitat.

-A supper with John Gogo, a Lethbridge MLA, was attended by Club President, Bill Brown, to discuss environmental issues.

F.A.N. Summer Field Meeting:

-This was organized by the Lethbridge Club and consisted of a hike in the South Castle Wildland, a mountainous area adjacent to Waterton Lakes National Park, July 11, 1987. Hike leader was Charlie Russell of Twin Butte, and 16 people participated. Ten were from Lethbridge, 2 from Medicine Hat, 1 from Calgary, 1 from Rockyford and 2 from Edmonton.

The first program of the new year, January 8th, was with F.A.N. President Rob Gardner, of Medicine Hat, speaking on a comparison of the African veldt with the Canadian prairies. This was based on a trip that Rob had to Africa, and was illustrated with slides.

The February 12th program included Stewart Rood of the University of Lethbridge, speaking about Canada's newest national park-kayaking through the Queen Charlotte Islands.

March 11th, Perry McCormick, of Ducks Unlimited in Brooks, spoke on waterfowl biology.

April 8th, George Scotter, of the Canadian Wildlife Service in Edmonton, will speak on "Parks and pingos-a look at the proposed Baffin/Bylot Islands National Park."

The May program will be the annual May Species Count.

Regular meetings are held on the second Friday of the month, 7:30 P.M., Room 1028, Cousins Building, Lethbridge Community College, 3000-College Drive South, Lethbridge, Alberta.

Graeme Greenlee

Bow Valley Naturalists

Bow Valley Naturalists had a very successful program year. Ranging from Dr. Peter Achuff's presentation on his work in western China helping to evaluate a large new nature reserve, to Rob Harding (Chief Park Naturalist Banff National Park) presenting a slide show on two of Canada's newest national parks, South Moresby and Bruce Peninsula, our programs were very well attended.

Highlights were a program on Height of the Rockies, a magnificent alpine area in southeastern B.C., which is the newest wilderness area in the province, and a presentation by bear biologist Wayne McCrory on traveling safely in bear country, and the Grizzlies of Khutzeymateen.

We also hosted the F.A.N. Spring meeting in May featuring a lecture on the Elk Study in Banff National Park and a related field trip by biologist, John Woods. As well, we had a successful May Species Count in Banff and the Yamnuska, and had good participation in the always enjoyable C.B.C.'s in Banff-Canmore and Bow Summit.

We continue to be very active in environmental issues in the national parks. Major issues this past year were the Four Mountain Park Planning Program, the Sunshine Village expansion proposal and Bill C-30. Provincially, we continued to hammer away at the government over logging in the Upper Oldman, construction of the Three Rivers Dam, gas extraction on Prairie Bluff (Corner Mountain), and the opening of Highway 40.

Gerry Wilkie

Alberta Speleological Society

A.S.S. has been remarkably active this past year, with several new karst areas in the province and in B.C. identified, given basic surface survey, and at least one cave in each in the process of survey.

Alberta Recreation and Parks has issued a contract to an A.S.S. member, with A.S.S. consultation, to develop a management plan and interpretive program for Rat's Nest in Kananaskis Country. The A.S.S. will also assist, as volunteer wardens, in the active managements of the cave.

In cooperation with Parks Canada and CBC-TV, supported by Husky Oil and Esso Resources, a major surface/subterranean cave-diving survey, using the now large supply of cave radios, will be undertaken in April. The cave radio project has now acquired a variety of funding sources --U.S. Park Service, U.S. Bureau of Mines, City of Edmonton (Sewers), and the U.S. Navy Seals team. Canadian Forces are preparing a response to a request to develop an integrated circuit form of the radio.

It now appears that at least two newsletters a year will actually be published, and this was so startling that it provided the impetus to comuterize the mailing list, so corporate member clubs will soon have our hair-raising reports in hand.

Maryhelen Posey

Recent Publications on Alberta Natural History

Compiled by David M. Ealey and Martin K. McNicholl

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Dudas, M.J. 1987. Accumulation of native arsenic in acid sulphate soils in Alberta. Can. J. Soil Sci. 67:317-331.

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Bighorn Sheep Ram. (Photo: Tom Branch)

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DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts,* January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants, Birds and Mammals,* July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; Compiler cooperation is greatly appreciated.

Editor: Derek Johnson
7109 - 106 St., Edmonton, Alberta T6E 4V5
Telephone: 436-8231 home, 435-7306 work

Executive Assistant: Ann Stefura

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Some Notes on Summer Food Habits of Bighorn Sheep

J. Derek Johnson

A recent note by Dunn (1988) inspired me to look up some of the data from my long-buried masters thesis, part of which involved a summer food habit study of Bighorn Sheep on Ram Mountain, southeast of Nordegg.

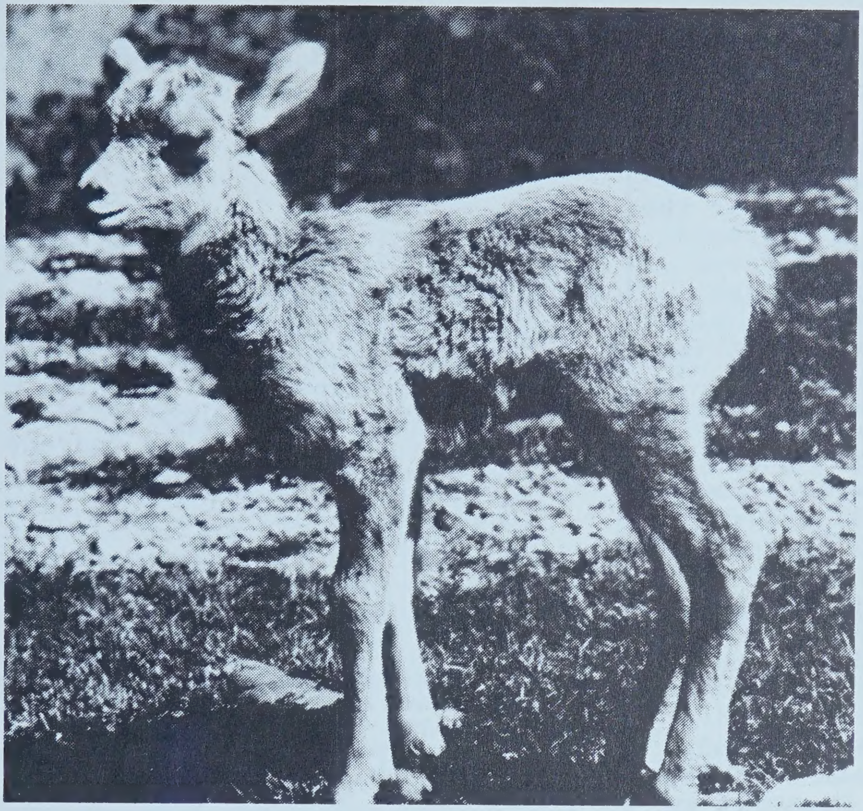
I had never worked with any large mammal before I began the thesis, nor had I ever really paid much attention to Bighorn Sheep, other than to admire them along the highways in the mountain parks. I certainly learned a lot during a summer of watching the sheep closely; their food habits were interesting and I was quite surprised at some of the things they ate. My only regret is that it was often difficult to get close enough to the sheep to accurately determine visually the particular plant species they were consuming. Unlike the protected herds in the national parks, some of which have become professional moochers despite the best attempts of park authorities to discourage the practice, the Ram Mountain herd is a herd exposed to hunting pressure. The animals were rather skittish most of the time and it was a rare occasion that I could come within 15 m of them , so I did a lot of my food habit observations through binoculars. These observations were supplemented by analyzing the rumen contents of 23 sheep (mostly ewes) that had been shot in the area over a 6-year period as part of the Fish and Wildlife Division's research program on the Ram Mountain herd. Seven of these samples were collected in May, two in June, four in August, five in September, and five in October. The rumen content analysis was an education in itself; by the time it was completed I could recognize Shrubby Cinquefoil (Potentilla fruticosa) on the basis of its stipules alone!

The plant preferences of Bighorn Sheep are related to geographic location, forage availability, and habitat type. However, throughout their range these animals are primarily grazers, with graminoids (grasslike plants) comprising the staple forage throughout the year (Todd 1972). Forbs (broad-leaved herbaceous plants) are consumed as available, with legumes being favored during the summer, particularly Hedysarum, Oxytropis, and Astragalus species (Flook 1964). Forbs and browse may alternate in secondary importance to the graminoids depending on season, location, and habitat (Todd 1972). Bighorn Sheep are known to be experimenters, sampling almost every plant species available in the habitat at one time or another (Deming 1964). I can certainly vouch for the sheep's curiosity when it comes to trying something new. Along with the food habit study, as part of my thesis research I conducted plant community analyses, estimating plant cover values using a series of rectangular plots. I was using some green nylon twine to temporarily mark the boundaries of my plots. In some areas frequented by the sheep I had problems maintaining the plots, because sheep, particularly some of the younger ones, developed an attraction to my green twine, frequently grabbing it in their mouths and dragging it off. On finding it to be unpalatable they usually dropped the twine and moved off. Sheep in other areas have been found with plastic flagging tape in their stomachs (W. Wishart, pers. comm.). Such nondigestibles could cause problems for the animals if consumed in any quantity.

Between direct observation and analysis of the rumen content samples, I found a total of 59 plant species to be consumed by the Bighorn Sheep on Ram Mountain. A large number of these species were only incidental, consumed by chance with a more favored forage species. A select group of species formed the preferred forage of the sheep on their summer range. Principal species in the graminoid class included Broad-glumed Wheatgrass (Agropyron violaceum)*, sedges (Carex spp.), Bog Sedge (Kobresia myosuroides), Fescue (Festuca baffinensis), and Alpine Bluegrass (Poa alpina). Predominant browse species were Common Bearberry (Arctostaphylos uva-ursi), White Mountain Avens (Dryas integrifolia), White Spruce (Picea glauca), Aspen (Populus tremuloides), and willows (Salix spp.). Canada Buffaloberry (Shepherdia canadensis) was browsed occasionally by the sheep but never to the extent noted by Dunn (1988). The most prevalent forbs included Indian Milk Vetch (Astragalus aboriginum), American Hedysarum (Hedysarum alpinum), Early Yellow Locoweed (Oxytropis sericea), Snow Cinquefoil (Potentilla nivea), and White Camas (Zigadenus elegans). The sheep exhibited no ill effects from eating locoweed, despite its reputation as a livestock poisoner (Kingsbury 1964), and they actually seemed rather fond of flowering stocks of this species. The attraction to White Camas came as a bit of a surprise as this species is considered slightly poisonous to livestock (Kingsbury 1964), but the sheep avidly sought it out, particularly in the late spring and early summer, biting off the newly-emerging leaves right down to ground level. The nonvascular plant group consisted almost solely of Basidiomycete fungi, primarily boletes. These are of seasonal occurrence, mainly in late summer and early fall, but were found often enough and in high enough amounts in rumen content samples from this period to indicate selective feeding on them by the sheep, rather than just simply chance occurrence. Algae, lichens, and mosses were found in only tracequantities in the rumen content samples and were almost certainly ingested incidentally with other forage.

Of equal interest to which species were consumed was the changing preference in forage and forage groups exhibited by the sheep during the spring-summer-fall period. Although the sample size is small, rumen content analysis showed that over 90% of the sheep's diet in May and October consisted of graminoids. This percentage fell sharply in June to just under 60%, while the amount of woody browse in the diet increased to almost 30%. From June until September there was a general decrease in the amount of browse consumed, a marked increase in forb consumption, and a steady rise in graminoid consumption. Forb consumption peaked at just below 10% of the diet in September. By October the sheep were again consuming an almost exclusively graminoid diet, and it is assumed that this pattern continued throughout the winter. This differs from Dunn's (1988) assessment that 70% of the winter diet of a Bighorn Sheep herd in Kootenay National Park consisted of shrubs. The general consensus in the literature is that graminoids form the basic winter diet of Rocky Mountain Bighorn Sheep (Todd 1972).

On Ram Mountain, new leaf growth in the graminoids commences in May on low elevation, south-facing slopes. At this time of year they form the most palatable and primary forage, almost to the exclusion of other groups. The increased consumption of browse and decreased consumption of graminoids in the late spring occurs at a time when the majority of deciduous species are beginning to leaf out and the young growth is tender and high in nutrients. Graminoids are



Bighorn Sheep lamb,
Ram Mountain.
(Photo: J.D. Johnson)

relied on heavily in the fall when the sheep have returned to their rutting and wintering ranges where limited movement occurs, and these plants are the most available forage. The greatest amount of food consumption occurs in the late spring and early fall. High consumption in the spring comes at a time when fat reserves are at their lowest level. Lactating ewes require a higher food intake to maintain milk production. Consumption is again high in the fall when the sheep accumulate fat in preparation for winter.

Some of the particular feeding habits of the sheep during the late spring-summer period surprised me, and by the time the summer was over I had come to think of the animals as gourmets who knew what fine dining was all about. My first surprise was to see the sheep in the latter part of June delicately plucking off the elongating new growth of White Spruce trees. I had always been led to believe that spruce needles were at best survival rations, but chemical analysis of new growth from the trees on which the sheep had been feeding revealed a higher crude protein content than in any of the 15 other species of plants analyzed over the summer, including the legumes! The flowering of many species has a direct bearing on the feeding habits of the sheep. The flowers of certain species are the only regularly consumed portions of these plants. This group includes species such as Common Yarrow (*Achillea millefolium*), Alpine Arnica (*Arnica angustifolia*), and Red Paintbrush (*Castilleja rhexifolia*). In addition, the flowers of White Mountain Avens, American Hedysarum, and most of the herbaceous cinquefoils are favored when present. The pollen contained in the flowers is rich in protein and particularly nutritious. The delicate manner with which the sheep plucked off the flowers, and only the flowers, of some species was amusing to watch. Another surprise in my food habit study was the amount of Tall Larkspur (Delphinium glaucum) consumed by the sheep. Although not a primary forage for the animals, they consumed all stages of growth, but appeared to favor young leaves and flowers. That they consumed this species at all was the biggest surprise as it is considered highly poisonous to livestock, although (domestic) sheep appear to be less affected by its toxic principle than other animals, and sheep have even been used in larkspur control programs on overgrazed ranges (Kingsbury 1964).

A number of researchers have concluded, and I would tend to agree, that the sheep do know which forage on their range is the best quality at any given time of the year and consistently seek it out. Limited chemical analysis of forage samples taken from Ram Mountain in the late June to early September period substantiated that the sheep are consuming a nutritionally adequate diet, at least during the spring-summer-fall period.

* Scientific nomenclature in this article follows Moss (1983); common names have been taken from Looman and Best (1979).

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Author's Address:
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.

Group of Bighorn rams, Sheep River Wildlife Sanctuary.
(Photo: J.D. Johnson)

Results of the 1986 May Species Count —Birds

Allen N. Wiseley

The 1986 May Species Count was held May 24 and 25, during a weekend of great weather for birding. A total of 189 observers turned out for this count which established another new record of species (241), surpassing the previous year's mark of 238. Results were submitted from the eight traditional count areas and five others including Medicine Hat, Waterton National Park, Crowsnest Pass, Whisky Gap, and Brooks. Medicine Hat was added to the list of regulars for yearly comparison purposes since they seem intent on continuing their count. The Whisky Gap and Brooks counts were first time efforts that are acknowledged with thanks here, but owing to a need for brevity were not added to the published table of results.

Weather conditions among the regular count areas were remarkably good, as temperatures reached at least the low 20's everywhere. The only rain reported was in Fort McMurray on the 24th. It was a bit breezy in several areas, but the winds were light enough that they probably had only a minor effect on the results.

LOCAL INFORMATION

The following section lists the locations and participants in each local count. Other details of the local counts can be found at the end of Table 1.

Medicine Hat -- locations Medicine Hat, Dunmore, Redcliff, South Saskatchewan River, Police Point Park. observers M. Oxamitny (Compiler), B. Larson, J. Marshall, M. and D. Schiebelbein, A. Sissons, D. Stockburger, P. Strickland, B.,D. and M. Velner, J. Vesso.

Lethbridge/Cardston/Claresholm -- locations Lethbridge, Cardston, Claresholm, Coaldale, Milk River Ridge Reservoir, Henderson and Jail Lake, Belly River, Oldman River at Lethbridge, south end Porcupine Hills, Pothole Coulee, Magrath and Indian Battle Park, Taber Provincial Park, Lethbridge Nature Reserve, Luco, Russell and Rollingson farms. observers T. Dolman (Compiler), D. and M. Axtell, A. and B. Brown, L. Curthoys, H. DeArmond, D. Dolman, C. Goodall, G. Greenlee, B. and L. Hall, A. and F. Harper, D. Hedenstrom, G. Heinz-Milne, H. Hudson, B. and G. Luco, B. and L. McKillop, L. Neubecker, G. Norgard, J. Niessen, M. O'Shea, S. Petherbridge, K. Russell, S. Shaw, H. Sivyer, J. and P. Wilkinson.

Banff-Canmore/Yamnuska -- locations Banff, Canmore, Wind Ridge. observers Mike McIvor (Compiler), J. and K. Cole, J. Greig, M. Langevin, P. and T. Lothian, D. McIvor, N. Meier, B. and M. Smith, E. and K. Zidkova.

Calgary -- locations listing unavailable. observers R. Dickson, J. McFaul, and J. McCullough (Compilers); T. Baker, A-M. Beckman, D. Blais, D. Buckley-Jones, C. Cooper,E. Dawson-Grove, J. Dickson, M. Dornian, J. and N. Elphinstone, J. Engelman, J. Flood, O. Gilbert, B. and H. Giles, F. Godfrey, J. Goldsmith, L. Guillemette, I. Halladay, E. and J. Hemmings, F. Hennessey, D. Higgin, C. Hitchmon, A. and M. Holder, J. Hood, C. Hunt, E. and B. Jacobs, D. Jantzie, L. Javeri, K. Jones, P. Kennedy, P. Keogh, E. Kethler, K. and B. Kewish, M. Klazek, T. Koziel, M. Langpap, S. L'Hirondelle, C. Lofthouse, P. Lundberg, C. and M. Manzer, G. McCullough, M. and J. McDonald, B. McKitterick, K. McLeod, J. and L. Moore, B. Murray, H. Pinel, J. Podlubny, M. Raine, R. Riddell, M. Rogers, H. and M. Ross, P. and B. Sherrington, G. Simpson, A. Slater, D. and A. Stiles, M. Thompson, S. Visser, B. Wilson, A. Wiseley.

Stettler/Buffalo Lake -- locations Stettler, Buffalo Lake Narrows, Red Deer River, Kruger and Bird Farms. observers L. Lohr (Compiler); A. and C. Bird, A. and J. Burrell, B. Clarke, V. Hainsworth, V. Hansen, A. Hagwood, G. and W. Hewlett, M. and R. Kruger, G. and G. Neill, K. Standquist, B. Smith.

Red Deer -- locations Red Deer, Blackfalds and Davey Lake, Red Deer and Blindman River, Hoar, Norman and Radonske sloughs, Waskasoo, Pearman and Harris farms, Wood property. observers M. Pearman (Compiler); C. Bruels, D. and D. Dickson, M. Glabais, H. and H. Harris, R. Leyland, F. McConnell, C. and E. Neufeld, M. O'Riordan, A. and B. Peck, J. Potter, A. and J. Robertson, B. and H. Shantz, J. Spiller, F. Schutz, K. and M. Wood, D. and S. Murray.

Edmonton -- locations Edmonton, Ellerslie Glenevis areas, Beaverhill Lake (south and west sides), St. Albert sewage ponds, Clifford E. Lee Nature Sanctuary, Capilano Park, Ministik Sanctuary, Lange farm. observers. J. Lange (Compiler); L. Baker, D. Cuthiell, J. Dorland, L. Hrubizna, D. Johnson, S. Jung-kind, M. and L. Landry, K. Lange, J. Pauls, G. Pegg.

Grande Prairie -- locations Wembley area, Bear, Hermit, Cutbank, Saskatoon and Uswells Lakes, farm at NW 5-72-7-W6. observers E. Craig (Compiler); G. Craig.

Fort McMurray -- locations Suncor Inc. Lease 86 between Athabasca River and Highway 63. observer J. R. Gulley (Compiler).

Waterton -- locations Waterton Lakes National Park. observers T. Dolman (Compiler); D. Dolman, B. Haig, J. Jellicoe, J. and L. Mather, L. McKillop, G. Ross, S. Shaw, J. and D. Wilkinson.

Brooks/Tilley -- locations Kinbrook Provincial Park, Lake Newell, Timko Lake, minor lakes in area. observers R. Storms (Compiler); E. Mah-Lim.

Crowsnest Pass -- locations no details. observers M. and H. Gibson, E. Bryant, S. McNeil, D. Cocciolóni-Amatto.

Whisky Gap -- locations Shanks Lake, Milk River, Sommerfeldt Ranch near Whisky Gap. observers G. Scotter (Compiler); B. and L. Sommerfeldt, E. Scotter.

RESULTS

The provincial data summary and changes from 1985 are as follows: total observers 189 (+15%), not including 29 feeder watchers in Calgary; total team hours 621 (+11%); total bird species 241 (+1%). Table 1 presents the species totals reported for each of the main count areas. Rare species or unusual numbers of individuals are shown in boldface.

Calgary again led all count areas in the species totals, with 178 reported, but was down 5% from its record 1985 total of 188. Among the other decreases Grande Prairie was down 6%, Edmonton 11%, and Fort McMurray 21%. Only three count areas had increases in totals. The highest was Red Deer (31%), followed by Stettler/Buffalo Lake (6%) and Lethbridge (3%). Medicine Hat and Banff/Yamnuska counts showed no change from 1985.

Among the highlights from Table 1 were four species not recorded on previous counts: Boreal Owl, Yellow-breasted Chat, Indigo Bunting and Common Redpoll. Gavin and Ellen Craig of Wembley counted seven Boreal Owls in one area on the Grande Prairie count. The Yellow-breasted Chats were added from Medicine Hat, which became a regular count area for the first time in 1986. John Gulley of Fort McMurray reported and documented the Indigo Bunting sighting on the Suncor lease area. He also reported the occurrence of a Lazuli Bunting in the town about a week earlier. The later than usual sightings of Common Redpoll were a flurry of records from four count areas: Banff, Calgary, Red Deer, and Grande Prairie. These four latest species additions bring the total number on the all time May Species Count list to 272 species.

In addition to the new species, 22 species were found in 1986 that were not reported on the 1985 count. These included Wood Duck, Harlequin Duck, Hooded Merganser, Broad-winged Hawk, Spruce and Blue Grouse, Whimbrel, Red Knot, Long-billed Dowitcher, Arctic Tern, Long-eared Owl, Red-naped Sapsucker, Hammond's Flycatcher, Brown Creeper, American Dipper, Bay-breasted and MacGillivray's Warbler, Sharp-tailed Sparrow, Fox Sparrow, Rosy Finch, Pine Grosbeak and Red Crossbill.

Of the species reported in 1985, 14 were not found on the 1986 count. These included Tundra Swan, European Wigeon, Oldsquaw, Mew Gull, Forster's Tern, Black-billed Cuckoo, Great Gray Owl, Black-backed Woodpecker, Western Flycatcher, Black-throated Green Warbler, Rusty Blackbird, White-winged Crossbill, Lark Bunting and Harris' Sparrow.

Changes in species abundance from 1985 were particularly numerous this year. Major increases led major decreases 33:26, compared to the previous year when decreases led increases by a greater than 3 to 1 margin (35:10). Birds that decreased markedly in 1986 included Common Loon, Black-crowned Night Heron; White-winged Scoter; Sharp-tailed Grouse; Spotted, Semipalmated, White-rumped, Baird's, Pectoral, Stilt and Buff-breasted Sandpiper; Red-necked Phalarope; Franklin's and California Gull; Least Flycatcher; Eastern Phoebe; Tree, Northern Rough-winged, Bank and Barn Swallow; Red-eyed Vireo; Tennessee Warbler; Ovenbird; Brown-headed Cowbird; Northern Oriole and Evening Grosbeak.

Substantially increased numbers were seen in 1986 in the following species; Eared and Western Grebe; Great Blue Heron; Canada Goose; Mallard; Northern Pintail; Redhead; Barrow's Goldeneye; Black-bellied Plover; American Avocet; Long-billed Curlew; Herring Gull; Black Tern; Western and Eastern Kingbird; Horned Lark; Cliff Swallow; Black-billed Magpie; Common Raven; Black-capped Chickadee; Red-breasted Nuthatch; Mountain Bluebird; Water Pipit; Cedar Waxwing; Rufous-sided Towhee; Lark Sparrow; Lapland Longspur; Western Meadowlark; Yellow-headed Blackbird; Purple Finch; Pine Siskin; American Goldfinch and House Sparrow.

DISCUSSION

The 1986 results, as in the last few years, show how dependent many of our bird species are upon the levels of water in lakes, ponds and sloughs. Water birds and species of wetland margins have been hurt by the recent years of drought. Although 1986 found increased water levels in parts of southern Alberta, many species had substantially reduced numbers, and it may take a series of good years to return to previous population sizes. There were many substantial declines of aquatic and semi-aquatic birds in our results. Comparisons of numbers obtained in better years, for example 1979 through 1982, with those of 1986 show species such as Red-necked Grebe with a 1986 count of only 48% of its highest count during those years, Pied-billed and Horned Grebes each at 27%, Ruddy Duck 33%, Blue-winged Teal and Northern Shoveler 43%, Marbled Godwit 30%, Franklin's Gull 20%, Black Tern 36% and Yellow-headed and Red-winged blackbirds each approximately 50%. These differences are large, and may in fact be larger: there is a tendency for observers to tire and stop counting birds at water bodies during wet years, whereas now observers make a point of stopping to count as many birds as possible on all precious ponds.

Some water birds increased dramatically in our counts from 1985 to 1986, although the numbers indicate only a partial recovery with respect to wet years. These include Eared Grebe, Mallard, Pintail, Redhead, American Avocet, Black Tern and Yellow-headed Blackbird. Their resilience may be due to their ability to leave the area during times of drought and return in subsequent years when water bodies are recharged. Mallards and Pintails are known to vacate the prairies for more northern regions during dry years.

The fact that Medicine Hat was added to the totals this year accounts for the increases in some species such as Great Blue Heron, Eastern and Western Kingbirds, Black-billed Magpie, Rufous-sided Towhee, Lark Sparrow, American Goldfinch, and Western Meadowlark.

Sampling differences from year to year continue to cause wild fluctuations in the counts of several species. Species that are in flocks at this time of the year may be seen or missed by chance, or colonies of birds may be discovered one year and not visited the next. 1986 increasers that probably fit this explanation include the Western Grebe, Canada Goose, Barrow's Goldeneye, Cliff Swallow, Water Pipit, Lapland Longspur, and perhaps Pine Siskin. Decreasers that might fit in this category include White-winged Scoter, Red-necked Phalarope, Evening Grosbeak, and perhaps Franklin's Gull. The efforts in some local counts may differ substantially from year to year, hitting or missing important areas or habitats. This may be a principal factor in increases in the Long-billed Curlew, Herring Gull, Horned Lark, Common Raven, and Mountain Bluebird, or in decreases in the Common Loon, Black-crowned Night Heron, Spotted Sandpiper, Sharp-tailed Grouse, and Ovenbird.

Another sampling effect that may cause large differences is the variation in the arrival/departure dates for species. The dates of the MSC are not ideal for estimating numbers of several earlier migrants or late-arriving breeding birds. Among the marked increasers that this may apply to are the Black-bellied Plover, Cedar Waxwing, and Pine Siskin, while decreasers may include several sandpipers--Semipalmated, White-rumped, Baird's, Pectoral, Stilt, and Buff-breasted. The large number of unidentified shorebirds reported may compensate for the marked decreases in two or three of these species. Identification of the "peep" sandpipers remains difficult for some observers, contributing to the lower totals among those species.

The remaining species with unusual changes in numbers in 1986 may have experienced actual population fluctuations, although evidence from our count numbers is limited. Some of these have returned to previously reported high numbers in the cases of the Purple Finch and House Sparrow, or have returned to lows in the cases of the Eastern Phoebe, Red-eyed Vireo, Brown-headed Cowbird, Northern Oriole and three swallows (Tree, Northern Rough-winged, and Bank).

Others have exceeded all previous highs or lows and have done so over a few count areas. The outstanding example of a bird that has increased on our species list is the Red-breasted Nuthatch. In the late summer/fall of 1985 this species seemed to have "invaded" the forested areas, ravines and woodlots of southern Alberta, remained to overwinter in good numbers (high counts in our CBC's), and apparently became established as breeding birds and permanent residents. Perhaps the "invasion" was a good reproductive year in the same widespread area of Alberta, but the suddenness of their appearance at that time of year seems to discount this.

The reasons behind the widespread decreases seem less apparent. The Tennessee Warbler, at least in the mountains and foothills, is believed to be a rather irruptive species (having large annual fluctuations in numbers). Perhaps this applies to the bird over much of the rest of its range in Alberta, and it decreased during the 1985-1986 year. It may have also been late in arriving. No explanations are clear in cases of either the Least Flycatcher or the Barn Swallow, which also decreased dramatically. These species should be given continued attention until it is clear that further decreases do not occur.

The future of the May Species Count of birds and the data generated will depend on the emphasis placed on it by the Federation of Alberta Naturalists. Since the 1987 adoption of the Alberta-wide Breeding Bird Atlas Project the priorities of F.A.N. and many member clubs will change, likely to the detriment of the May Species Count. Since I have left the province and can no longer be provincial coordinator for the MSC of birds, I would suggest that it is a good time to re-evaluate the format of this annual effort.

Author's Address:
#202, 635 - 56 Ave. S.W., Calgary, Alberta
T2V 0G9.

Photo at right

Common Redpoll (above) and Lesser Snow and Ross' geese (below). Three of the rarest species reported on the 1986 May Species Count.
(Photo: Edgar T. Jones)

Table 1: May Bird Count 1986

Full names for count areas are given in the text.

SPECIES	MEDI	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL
Common Loon	3	1	4	4			1	3	2	18
Pied-billed Grebe				4		3	1	2	2	12
Horned Grebe	2	9	3	23	9	10	6	1	wk	63
Red-necked Grebe			1	48	2	38	8	15	2	114
Eared Grebe		4		410	2	26	6	400	wk	848
Western Grebe	2	38	2	37		4	13	30		126
American White Pelican	2	73								75
Double-cr. Cormorant	9	9		26						44
American Bittern			3	3			1	3		10
Great Blue Heron	48	17		46	4	13	3		5	136
Black-cr. Night-Heron				**56**						56
Trumpeter Swan								20		20
Gr. White-fronted Goose									wk	0
Lesser Snow Goose		1							wk	1
Ross' Goose				1						1
Canada Goose	200	613	34	1189	147	136	25	107	wk	2451
Wood Duck			**8**							8
Green-winged Teal		10	10	28	9	6	37	8	16	124
Mallard	140	174	26	689	189	119	126	120	17	1600
Northern Pintail	90	114		202	33	22	37	51	wk	549
Blue-winged Teal	10	92	8	242	124	57	128	20	35	716
Cinnamon Teal		20	3	**84**	2	8	2			119
Northern Shoveler	30	75		182	32	57	71	32	18	497
Gadwall	21	44		156	38	13	8	73	11	364
American Wigeon	16	36	2	147	6	17	24	161	14	423
Canvasback	17	14		65	29	36	10	41	2	214
Redhead	17	19		78	52	72	101	34	26	399
Ring-necked Duck				69		21	36	9	18	153
Lesser Scaup	11	68	2	469	58	191	123	519	64	1505
Harlequin Duck				3						3
Surf Scoter						2			18	20
White-winged Scoter				29		61	1	199	wk	290
Common Goldeneye	4			21	2	46	9		27	109
Barrow's Goldeneye			8	42	1			6		57
Bufflehead			10	34	8	57	27	29	20	185
Hooded Merganser			2	1						3
Common Merganser	12	33	16	65	10	6		12	wk	154
Red-breasted Merganser	1								wk	1
Ruddy Duck		17		131	3	89	32	8	12	292
Turkey Vulture					3					3
Osprey			3	2		1				6
Bald Eagle	1		3					4		8
Northern Harrier	8	39		16	7		5	3	3	81
Sharp-shinned Hawk				1	1	2				4
Cooper's Hawk				2	1	1			2	6
Northern Goshawk									wk	0
Unidentified Accipiter		1								1
Broad-winged Hawk				2						2
Swainson's Hawk	29	101		85	5	12	2			234
Red-tailed Hawk		39	3	85	35	30	24	2		218
Ferruginous Hawk				2						2
Rough-legged Hawk				1					wk	1
Unidentified Hawk		1								1
Golden Eagle	3	1		5						9
American Kestrel	12	24	1	38	2	1	3	7	10	98
Merlin	3	1		2		1	2			9
Peregrine				wk						
Prairie Falcon	4	1		1						6
Gray Partridge	2	51		17		4	2			76
Ring-necked Pheasant	25	9		15		4	3			56
Spruce Grouse			2	2						4
Blue Grouse				1						1
Ruffed Grouse		wk	2	19		7	1	9		38
Sharp-tailed Grouse	3									3
Sora	1	wk	1	19		1	4	7	3	36
American Coot		31	5	252	42	64	128	30	46	598
Sandhill Crane									4	4
Black-bellied Plover		274		30			10			314
Lesser Golden-plover									10	10
Killdeer	40	109	6	82	23	19	28	7	17	331
American Avocet	6	54		214	15	12	4			305
Greater Yellowlegs	1			4	4				wk	9
Lesser Yellowlegs	1				2	6	7	26	4	46
Solitary Sandpiper			2	3				4		9
Willet	10	33		44	3		6			96
Spotted Sandpiper	9	55	16	**62**	13	1	14	2		172
Upland Sandpiper		1		8			6			15
Whimbrel				2						2
Long-billed Curlew	4	29		7						40
Hudsonian Godwit						1*				0
Marbled Godwit	2	39		38	2	1	11	1		94
Ruddy Turnstone							5		wk	5
Red Knot							8			8
Sanderling							3			3
Semipalmated Sandpiper				86	11	32	25	1	wk	155
Least Sandpiper				22					wk	22
White-rumped Sandpiper							1	6		7
Baird's Sandpiper				23					2	25
Pectoral Sandpiper							3		21	24
Stilt Sandpiper							15		wk	15
Buff-breasted Sandpiper							10			10
Unidentified Peeps		219			375					594
Short-billed Dowitcher				3		7			wk	10
Long-billed Dowitcher				5	5					10
Common Snipe		5	15	43	3	7	33	14	2	122
Wilson's Phalarope	11	198	1	204	15	43	9		wk	481

SPECIES	MEDI	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL
Red-necked Phalarope	1	1		85						87
Franklin's Gull		41		450	16	55	717	195	3	1477
Bonaparte's Gull				2		20	2		3	27
Ring-billed Gull	300	105		333	25	97	69	50	7	986
California Gull	4	23		50	1	30	1	5	279	393
Herring Gull	64			26				2	294	386
Unidentified Gull		1582			45					1627
Common Tern	3	21		9	1	1	2			37
Arctic Tern				1						1
Forster's Tern				25						25
Black Tern	4	6		142	25	91	138	50	2	458
Rock Dove	220	126		81	10	14	9	2		462
Mourning Dove	60	112		9	2	6	4			193
Great-horned Owl	10	20		8		3				41
Burrowing Owl	2	wk								2
Barred Owl								1		1
Long-eared Owl		wk		3						3
Short-eared Owl		**10**		1						11
Boreal Owl								7		7
Northern Saw-whet Owl						1		1		2
Common Nighthawk	3									3
Ruby-throated Humming				1	1	6	3			11
Calliope Hummingbird				2						2
Rufous Hummingbird			7	4						11
Belted Kingfisher		3	1	19	2	3	3		wk	31
Yellow-bellied Sapsucker		3	2	19		3	7	2	1	37
Red-naped Sapsucker				5						5
Downy Woodpecker	3	3		19	2	14	3	2		46
Hairy Woodpecker	1	4		6		8		2		21
Three-toed Woodpecker				1			1			2
Northern Flicker	19	42	9	57	8	9	6	7	4	161
Pileated Woodpecker			2			5				7
Olive-sided Flycatcher			2	2		1	3			8
Western Wood-Pewee	2	5	1	42		5	7	2	wk	64
Yellow-bellied Flycatchr	1*									0
Alder Flycatcher				1			1		1	3
Least Flycatcher		45	11	144	15	36	114		10	375
Hammond's Flycatcher				1						1
Dusky Flycatcher				18						18
Unidentified Empidonax		3								3
Eastern Phoebe		2		3	2	5	10		1	23
Say's Phoebe								1	1	2
Western Kingbird	40	57		11						108
Eastern Kingbird	75	101	2	61	6	6	27	3	2	283
Horned Lark	53	242		26					175	496
Purple Martin					20	8	14			42
Tree Swallow	7	85	75	421	49	273	110	11	73	1104
Violet-green Swallow			2							2

SPECIES	MEDI	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL
North. Rough-winged Sw.		28	17	163		6				214
Bank Swallow	125	209		148	280	720	5		318	1805
Cliff Swallow	82	601	6	610	36	3000	50		800	5185
Barn Swallow	56	79	2	209	81	21	29	21	19	517
Gray Jay		wk	5	17				10	1	33
Blue Jay				16		17	21		1	55
Clark's Nutcracker		wk		2						2
Black-billed Magpie	475	207	8	272	28	46	154	21	4	1215
American Crow	50	141	9	299	70	64	48	29	7	717
Common Raven		22	14	78		3	2	5	93	217
Black-capped Chickadee	9	28	6	118	8	81	40	6	2	298
Mountain Chickadee		1	4	2						7
Boreal Chickadee				9		7	1		wk	17
Red-breasted Nuthatch	2	17	15	**172**	2	19	7	1	1	236
White-breasted Nuthatch	1			1		6	1			9
Brown Creeper		3								3
Rock Wren	1	8								9
House Wren	41	109		95	3	31	13			292
Marsh Wren					12		1			13
American Dipper				8						8
Golden-crowned Kinglet		wk	5	13						18
Ruby-crowned Kinglet		1	9	110		8	6	2	8	144
Mountain Bluebird	1	30	4	82	12	32	3	2		166
Townsend's Solitaire	2	wk	4	4				1		11
Veery		1		5						6
Gray-cheeked Thrush								2*		0
Swainson's Thrush		45	2	7			6		wk	60
Hermit Thrush		1	4	7		1	1	1	wk	15
American Robin	108	356	30	417	33	135	99	32	21	1231
Varied Thrush	4	1	3	10						18
Gray Catbird	51	15		6		1	3			76
Brown Thrasher	24	15								39
Water Pipit								20	264	284
Sprague's Pipit	25	wk		16			2			43
Unidentified Pipit		3								3
Bohemian Waxwing			3						wk	3
Cedar Waxwing	15	11		32	7	2	15			82
Loggerhead Shrike		1								1
European Starling	359	710	8	581	58	48	96	24	1	1885
Solitary Vireo				2			2			4
Warbling Vireo	10	1	4	37	1	2	8			63
Philadelphia Vireo		1		3		1	4			9
Red-eyed Vireo	2	6		14		8	25		4	59
Tennessee Warbler	2		4	28			37	2	21	94
Orange-crowned Warbler		1	7	8					wk	16
Yellow Warbler	240	95	11	168	21	33	52	6	35	661
Magnolia Warbler		wk					1			1
Cape May Warbler									2	2

SPECIES	MEDI	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL
Yellow-rumped Warbler	1	4	69	95		8	8	8	16	209
Townsend's Warbler			6							6
Palm Warbler									3	3
Bay-breasted Warbler									2	2
Blackpoll Warbler			2	1			2	2		7
Black-and-white Warbler		wk		2					1	3
American Redstart		6	2	1					5	14
Ovenbird	2		2	12		2	11		6	35
Northern Waterthrush			6	11					7	24
Connecticut Warbler				1						1
Mourning Warbler									wk	0
MacGillivray's Warbler				1						1
Common Yellowthroat	50	23	19	19	3		6		2	122
Wilson's Warbler	5	12	5	4			1		7	34
Canada Warbler	**3**								wk	3
Yellow-breasted Chat	**10**									10
Western Tanager		1		10					4	15
Rose-breasted Grosbeak				20		1	14	2	2	39
Lazuli Bunting	12									12
Indigo Bunting									**1**	1
Rufous-sided Towhee	**205**	14								219
American Tree Sparrow	2*							9		9
Chipping Sparrow	2	36	37	114	7	13	36	2	37	284
Clay-colored Sparrow	21	84		344	39	37	54	3	9	591
Vesper Sparrow	5	150		101		6		1		263
Lark Sparrow	25	21			9					55
Lark Bunting									**wk**	0
Savannah Sparrow		172	11	169	13	10	45	56	77	553
Baird's Sparrow		2			4					6
Le Conte's Sparrow					2	1	4			7
Sharp-tailed Sparrow							1			1
Fox Sparrow								2	2	4
Song Sparrow	6	11	7	36	26	13	19	5	21	144
Lincoln's Sparrow		wk	10	19			22	1	2	54
Swamp Sparrow							2		2	4
White-throated Sparrow			4	20	2	32	42	4	20	124
White-crowned Sparrow		3	11	45		6	1	5	wk	71
Harris' Sparrow									wk	0
Unidentified Sparrow				4		2				6
Dark-eyed Junco	11	wk	14	35	1	13			5	79
Lapland Longspur									197	197
Chestnut-coll. Longspur	1	28								29
Snow Bunting									wk	0
Bobolink	1						1		1	3
Red-winged Blackbird	340	270	50	892	128	209	381	191	129	2590
Western Meadowlark	470	171		54	12		3		wk	710
Yellow-headed Blackbird	121	508	1	509	75	51	100	10	35	1410
Rusty Blackbird	*7					*1				0

SPECIES	MEDI	LETH	BANF	CALG	STET	REDD	EDMO	GRAN	FORT	TOTAL
Brewer's Blackbird	80	171	10	194	22	86	30	19	49	661
Common Grackle	20	60		15	4	4	66	8	7	184
Brown-headed Cowbird		138	55	211	11	15	46	79	37	592
Northern Oriole	75	84		91	5	42	60	7	wk	364
Rosy Finch				1						1
Pine Grosbeak			1							1
Purple Finch				18		37	23	8		86
Red Crossbill				30						30
Common Redpoll			1	1		1		2		5
Pine Siskin		7	36	538		11	33	40	wk	665
American Goldfinch	90	79		87	11	56	24			347
Evening Grosbeak			2	15		16	11	10	wk	54
House Sparrow	190	552	1	309	32	21	64	1	9	1179
AREA TOTALS	**5112**	**10792**	**862**	**15917**	**2615**	**7051**	**4301**	**3027**	**3586**	**53263**
SPECIES	105	119	89	178	90	119	134	97	92	241
% CHANGE vs 1985	0	3	0	-5	6	31	-11	-6	-21	1
WEATHER:										
precipitation (mm) 5/24	-	0	0	0	0	0	0	0	1.4	
5/25	0	0	0	0	0	0	0	0	0	
cloud cover (%) 5/24	-	20-80	20-60	na	20-70	10-40	10-80	60	na	
5/25	10-20	10-70	0-10	na	10-20	20-90	100	80	na	
wind direction 5/24	-	S	W	na	SE	var.	SE		W	
speed 5/24	-	14-30	5-25	na	to 50	var.	30	calm	10-22	
direction 5/25	S	S-SE	W	na	S	SW	SE		SE	
speed 5/25	24-30	6-38	0-10	na	to 50	var.	15	calm	10-18	
temperature (C) 5/24	-	10-25	3-19	na	to 20	15-30	10-22	5-22	7-18	
5/25	12-25	15-27	6-24	na	10-28	12-31	10-30	11-25	6-23	
TEAM EFFORT:										
hours walking	25	na	44.0	163	6.5	68.5	27.0	3.5	3.0	340
driving	35	na	5.5	55	13.5	24.5	24.5	10.0	12.5	181
other (canoe, bike)		na			7.0	2.5	6.0			16
Total hours	60	na	49.5	218	34	98	63.5	13.5	15.5	537
distance (km) walking	125	62	58	166	9	48	32	3	4	507
driving	675	794	170	1215	250	371	280	134	125	4014
other					24	10	24			58
Total distance	800	856	228	1381	283	429	336	137	129	4579
* = insufficient detail provided										
wk = Observed during the week before or the week after the count, but not on the count weekend										
na = not available from compiler										

The Breeding Bird Surveys in Alberta, 1968-87

Jack Park

The Breeding Bird Survey is an ongoing co-operative programme sponsored jointly by the U.S. Fish and Wildlife Service and the Canadian Wildlife Service. Its main purpose is to estimate population trends of the many species of birds that nest in North America north of Mexico and migrate across international boundaries. The scheme was first started in the eastern U.S. and Canada in 1965. In 1968 the whole of the U.S. and Canada was included in the programme. In 1968 Alberta ran 5 routes and to date two of those original routes are still run by the same observers.

All observers receive a route map, field and summary sheets complete with a set of instructions which are standard throughout Canada and the U.S. Each route consists of 50 three minute stops along a predetermined route starting 1/2 hour before sunrise. Preferably routes should be run in June. The first week in July is marginally acceptable but time has proven that results are not as satisfactory as the last week in May would be for example. An average of 27 routes per year are run, the highest being 1981 when 39 routes were run. There were 32 routes run in Alberta in 1987.

A total of 239 species have been sighted over the past 20 years, including the following rarities: Peregrine Falcon 1968, 1970; Piping Plover 1981; Red-breasted Merganser 1987; Blue Grouse 1975, 1984, 1986; Sage Grouse 1973; Herring Gull 1985; Forster's Tern 1973, 1985; Barred Owl 1968; Sedge Wren 1972, 1976; Gray-cheeked Thrush 1968; Black-headed Grosbeak 1974, 1980; and Cassin's Finch 1985. Turkey Vulture and Stellar's Jay have yet to be sighted on the Alberta B.B.S.

When sorting names from files I came up with 81 individuals who have participated as observers over the past 20 years. My thanks to those whose names appear below and their drivers, recorders, wives, husbands,and friends, most of whom remain anonymous in the record files.

Peter Assmann, David Boag, Ray Bouchard, G. Bradd, Mr. and Mrs. G. Bulmer, Hugh Campbell, Ludwig Carbyn, Doug Collister, Ellen Craig, Dave Cuthiell, Peter Demulder, Theresa Dolman, Richard Donaghey, Mary Dyer, David Ealey, Rainer Ebel, C.B. Ellis, Dr. A.J. Erskine, Cam Finlay, Joy Finlay, Warren Finlay, Loran Goulden, Graeme Greenlee, John Gulley, Mrs. E. Hall, Willis Hall, Ian Halladay, Miles Hennie, Allan Hingston, Geoff Holroyd, Phil Horch, James Horton O.G. Hoyme, Harvey Johnson, Mrs. H. Johnson, Mrs. H.L. Johnson, Bruce Jones, Stefan Jungkind, Cena King, John Kinnaird, Mr. and Mrs. W. Lang, Don Lockhart, Lloyd Lohr, Ken Lumbis, Simon Lunn, Paul Marshal, Gary McKay, William McKay, Gerry McKeating, Martin McNicholl, Wayne Mennie, Jim Minty, Lilian Neary, Robin Owens, Jack Park, Myrna Pearman, Linda Pilarski, Jamey Podlubny, Roy Richards, A.D. Roberts, Helen Schuler, William Sharp, John Sheir, Peter Sherrington, Andrew Slater, Alan Smith, Hugh Smith, Wayne Smith, John Steeves, Harry Stelfox, Herb Syvyer, Eric Tull, Robert Turner, Hank Vanderpol, Terrance Waters, Wayne Weber, D.V. Weseloh, Geof White, Willie Wiebe, Allen Wiseley, and Jim Woolford.

The following pages contain specific information and breakdown of results and species, etc.

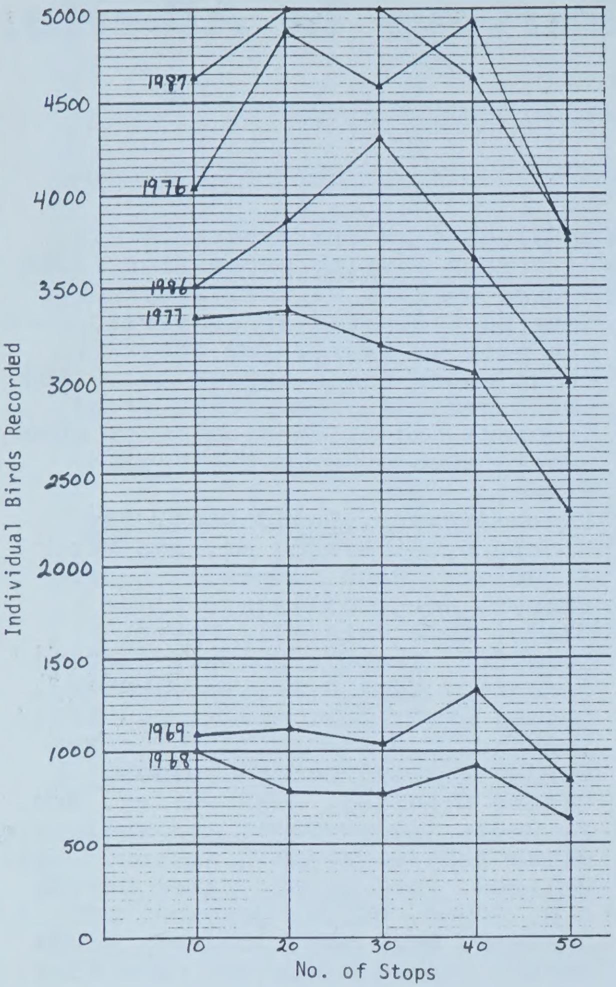
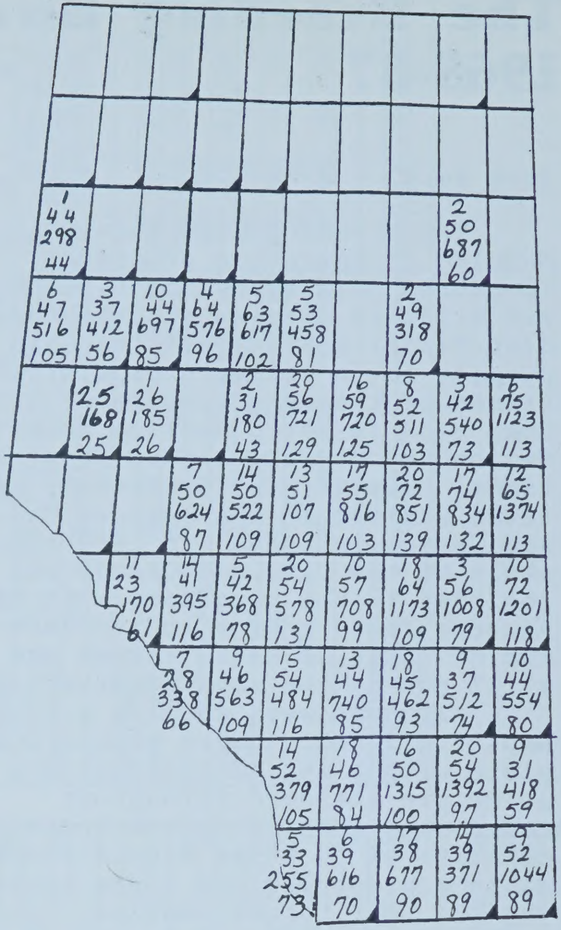


Figure 1.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2 50 687 60
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3 37 412 56
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5 63 617 102
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1 25 168 25
1 26 185 26
2 31 180 43
20 56 721 129
16 59 720 125
8 52 511 103
3 42 540 73
6 75 1123 113
7 50 624 87
14 50 522 109
13 51 107 109
17 55 816 103
20 72 851 139
17 74 834 132
12 65 1374 113
11 23 170 61
14 41 395 116
5 42 368 78
20 54 578 131
10 57 708 99
18 64 1173 109
3 56 1008 79
10 72 1201 118
7 28 338 66
9 46 563 109
15 54 484 116
13 44 740 85
18 45 462 93
9 37 512 74
10 44 554 80
14 52 379 105
18 46 771 84
16 50 1315 100
20 54 1392 97
9 31 418 59
5 33 255 73
6 39 616 70
17 38 677 90
14 39 371 89
9 52 1044 89

Figure 2.

Table 1.

Year	No. of Rts.	10 Stops	20 Stops	30 Stops	40 Stops	50 Stops	Total Indv.	Indv. Per Rt.
1968	5	1000	792	786	795	623	3996	799
1969	8	1080	1110	1042	1326	838	5396	674
1976	29	4045	4894	4580	4936	3750	22205	765
1977	21	3345	3371	3182	3045	2280	15223	724
1986	25	3502	3858	4301	3648	2983	18292	731
1987	31	4626	5062	5070	4628	3789	23175	747
Total	119	17598	19087	18961	18378	14263	88287	741
Average Indv. Per 10 Stops		148	160	159	154	120		

Table 2.
The Top 20 Species From 1983-87.

Year	1983	1984	1985	1986	1987	
Number of routes	27	25	30	25	32	
Species						Total
Red-winged Blackbird	1648	1342	1449	1327	1548	7314
Cliff Swallow	1007	721	937	1316	2303	6294
House Sparrow	1055	943	690	715	1243	4646
European Starling	1187	966	736	664	955	4508
Common Crow	857	851	686	764	890	4048
Horned Lark	681	581	801	722	758	2553
Clay-colored Sparrow	497	458	462	454	629	2500
Brewer's Blackbird	659	520	662	548	837	3226
Savannah Sparrow	748	506	693	563	670	3180
Ring-billed Gull	401	712	775	467	811	3166
American Robin	612	627	626	506	748	3119
Mallard	484	561	508	382	989	2924
Western Meadowlark	418	403	435	426	389	2071
Brown-headed Cowbird	353	446	307	386	505	1997
Chestnut-coll. Longspur	369	344	444	315	315	1787
Black-billed Magpie	340	304	282	244	422	1592
Barn Swallow	350	284	278	291	308	1511
Song Sparrow	369	208	273	284	383	1517
Vesper Sparrow	282	326	265	264	333	1470
Yellow Warbler	255	257	340	231	302	1385

The graph on page 54 (Figure 1) indicates the number of individual birds recorded province-wide for 1968, 69, 76, 77, 86, and 87. It is divided into 10 stop intervals to show the level of bird activity during the approximate 4 hour period taken to complete a survey. This indicates the importance of completing a route on time as bird activity usually decreases rapidly after 30 stops. On average it takes approximately 48 minutes to complete 10 stops.

A break-down of the 6 years' data is given in Table 1.

The accompanying map of Alberta (Figure 2) shows the degree blocks containing routes throughout the province where there are available roads. The numbering system starts at the bottom right-hand corner of the province and proceeds left, therefore the number one route is in the southeast corner. There are four sets of numbers in each block. The top number indicates the number of times the route has been run, the second the average number of species, the third the average number of individuals seen each year and the fourth the total number of species that have been recorded over the period of years each route has been run. The small triangle in the bottom right-hand corner indicates that these routes need observers, and the degree blocks with only the triangle indicate that the route has never been run.

Following is a brief look at population trends of species that are high in numbers.

HERONS AND BITTERNS

The Great Blue Heron shows an increase but they are difficult to monitor due to their remote locations, usually far from roads and consequently the fixed B.B.S. routes. Most are seen in flight. Black-crowned Night Herons and American Bitterns show a decline.

DUCKS

The Mallard is by far the most common species numbering nearly half of the total waterfowl count. The past 10 years show a decline in most species with the most dramatic in the Pintail population. However, there are increases in Redheads, Buffleheads and Ruddy Ducks.

HAWKS

Red-tailed and Swainson's Hawk show increases in population while Ferruginous Hawk, Northern Harrier and Kestrel are declining. From 1968 to 1979 Saskatchewan, North Dakota and Alberta had the highest numbers of Northern Harriers per route in North America.

GROUSE, SORA AND COOT

All three of these species show a steady decline, especially in the last 15 years.

SHOREBIRDS

The shorebird family, with the Killdeer leading the population followed closely by Common Snipe and Marbled Godwit, show mixed results. Common Snipe, Curlew, Spotted Sandpiper and Avocets show increases. Lesser Yellowlegs show no change, with declines in Killdeer, Upland Plover, Willet and Marbled Godwit. Alberta along with Idaho had the greatest numbers of Common Snipe per route from 1968 to 1979.

BLACK-BILLED CUCKOO

The Black-billed Cuckoo is well worth mentioning here though the numbers have been exceedingly low from 1968 to 1986. In 1987 a virtual outbreak in the population took place. From 1968 to 1986 only 11 individuals were seen, primarily on only one route, but in 1987 there were 34 individuals seen on seven routes. They were Derwent, Two Hills, Calahoo, Thunder Lake, Warburg, Ronan (Mayerthorpe) and Waterton Park. This species has shown a significant increase in the eastern region and across the continent. The highest concentrations were in the Great Lakes Transition, Manitoba and Connecticut in the period 1965 to 1979.

WOODPECKERS

The B.B.S. still separates flickers as Red- and Yellow-shafted, though unfortunately some observers mark their field and summary sheets as Common Flicker, losing the population count of these two types of flicker. This is also true of Audubon's and Myrtle Warblers. The Alberta records now have these lumped together as Common Flicker and Yellow-rumped Warbler. As many mountain routes are now established, it is unfortunate that separate data on these species is now lost. No particular species of woodpecker shows any large gain, but a steady increase can be observed.

FLYCATCHERS

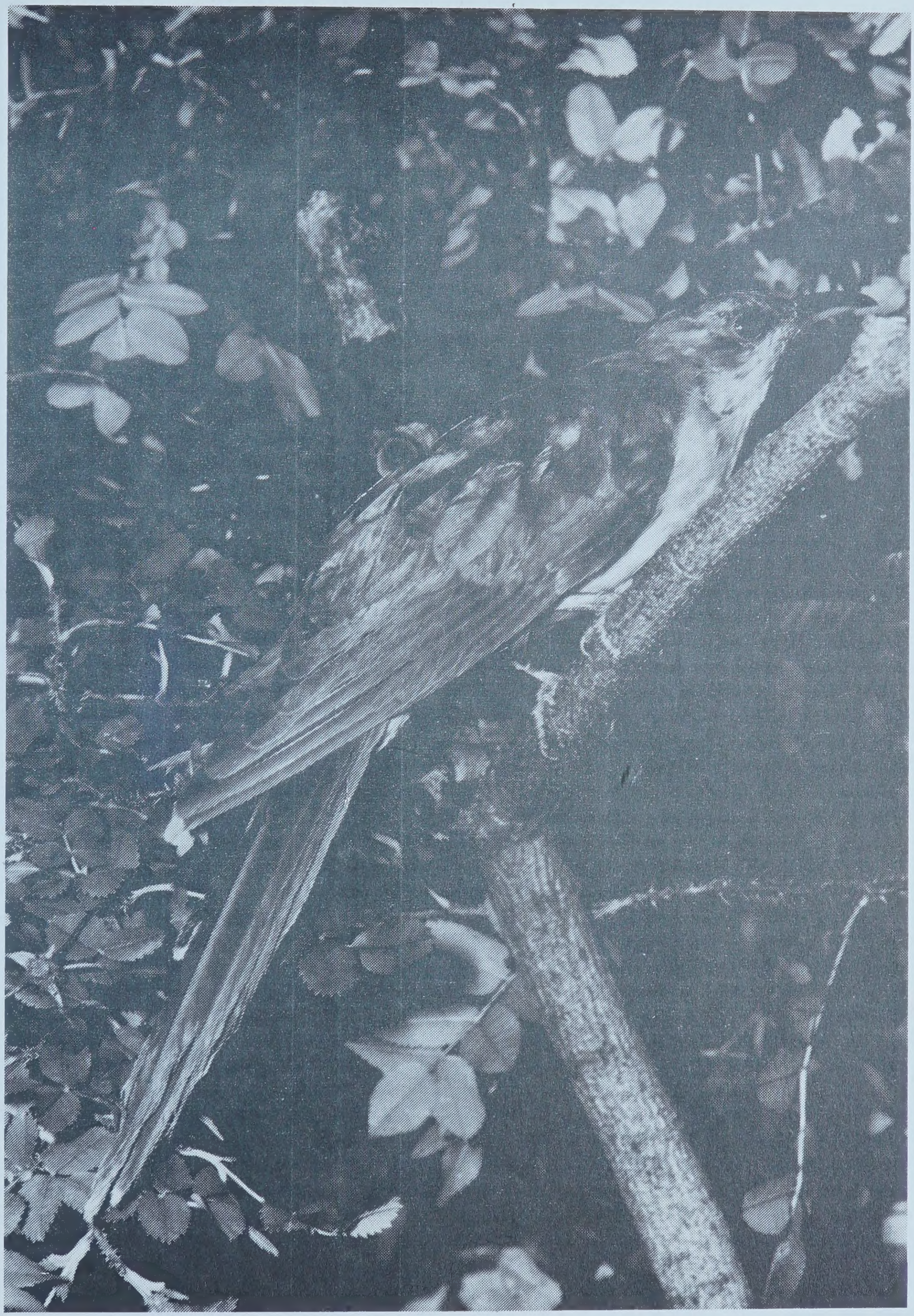
Taking the 6 species that are the most abundant, we find increases in Western Wood Pewee, and Alder and Least Flycatchers, all of which have made good gains over the past 5 years. Eastern Kingbird, Western Kingbird and Eastern Pheobe show decreases in a very gradual decline.

SWALLOWS

All swallow species are up in numbers especially Cliff Swallows as new routes have uncovered large colonies and a few new colonies have been discovered on old routes. In 1987, 2,303 Cliff Swallows were recorded, whereas the previous high for any one year was 1,316 in 1986. Tree Swallows are on the increase due to the many bluebird lines that now exist that favour their nesting. Bank Swallows also show marked improvement in numbers.

WARBLERS AND VIREOS

All vireos and most warblers have increased in numbers in the past 10 years. Robins et al. (1986) note that a factor contri-



Black-billed Cuckoo. (Photo: Edgar T. Jones) buting to the increase in warblers is the banning of DDT in Canada and the U.S. An analysis of birds killed at a Tallahassee, Florida TV tower showed a significant decline in the presence of DDT derivatives in 10 songbird species from 1964 to 1973 (Johnston 1974). Tennessee, Yellow and Yellow-rumped Warblers, Ovenbird, Northern Waterthrush, Connecticut and Mourning Warblers all show increases, the Common Yellow-throat shows no change over the past 10 years.

BLACKBIRDS AND ORIOLES

In Alberta the Western Meadowlark shows a steady decrease from 1968 to the present. In some of the more northern routes it has disappeared altogether. From the period 1968 to 1972 there was an average of 34 birds per route; 1973 to 1977, 27 per route; 1978 to 1982, 25 per route; 1983 to 1987, 22 per route. Southern Alberta shows much less of a decline than the northern areas. Yellow-headed, Red-winged and Brewer's Blackbirds and Northern Oriole all show increases, along with the Brown-headed Cowbird.

LARK BUNTING

The Lark Bunting, a Great Plains species, showed declines virtually throughout its range. From 1965 to 1977 a total of 657 individuals were seen on B.B.S. routes, and from 1978 to 1987 only 72 individuals were recorded. These declines were significant for the central region, the continent and for North and South Dakota. The most dramatic decline was in the Drift Prairie, which extends from eastern South Dakota northwestwards to Alberta.

SPARROWS AND LONGSPURS

Savannah, Le Conte's and Chipping Sparrows, Dark-eyed Junco, White-throated and Lincoln Sparrows show increases, whereas Grasshopper, Baird's, Vesper, Clay-colored and Song Sparrows along with McCown's and Chestnut-collared Longspur show decline. Alberta had the highest concentration of Le Conte's Sparrow, and the three prairie provinces provide the highest abundance of Clay-colored Sparrows.

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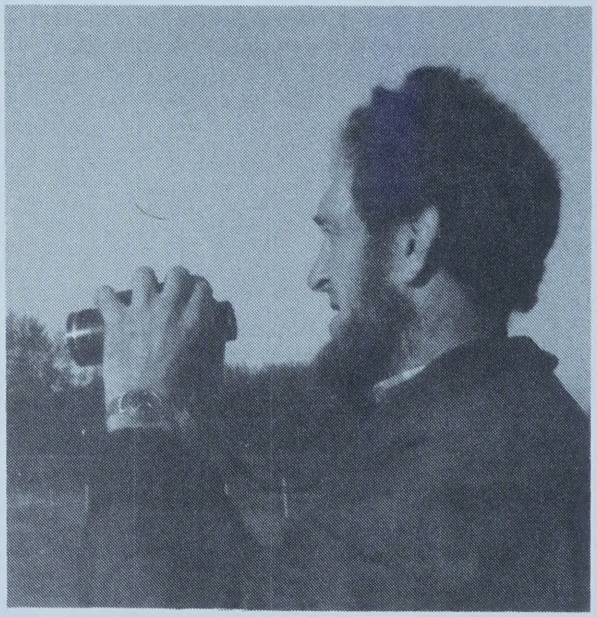
Author's Address:
10236 - 70 Street, Edmonton, Alberta T6A 2T4.



Jack Park on the B.B.S. route at Derwent, near Vermillion. (Photo: Lorne Wallace)

Editor's Note: Jack Park, an amateur ornithologist, cabinet-maker by trade, has run the Thunder Lake route continuously since 1968--the first year of the Breeding Bird Surveys in Alberta. He has been the coordinator for the province since 1973 and would welcome any offers of assistance by writing to 10236 - 70 Street, Edmonton, Alberta T6A 2T4, or phoning (403)469-8127.

Marg Reine: Recipient of the 13th Loran L. Goulden Memorial Award

L.N. Carbyn

In May 1977, Edmonton became the first city in Canada to have a Canadian Nature Federation sanctuary at its doorstep. Located in the Devon Sandhills area is the Clifford E. Lee Nature Sanctuary. The tenth anniversary of the acquisition of this unique area has come and gone. Acquiring it was fun. All who participated enthusiastically pitched in and fired up a dream which would become reality. Once established though, much of the real drudgery began. Funds had to be raised to build boardwalks, erect fences, clear trails, and set up registration stations. And then there was garbage pick up, insurance, talks at schools, vandalism, and interpretive pamphlets--the list goes on and on. Volunteers were needed. In a long parade individuals stepped forward and contributed their time and effort. Most of them came, served their term and then left. Two individuals persevered throughout, Dick Clayton (treasurer) and Margaret Reine (member, chairperson and then member again). Through Marg's leadership a great deal was accomplished. It was therefore fitting that in 1988, the Edmonton Natural History Club bestowed on her the Loran Goulden Award.

Marg was born and raised in Alberta. She graduated in 1970 from the University of Alberta with a B.Sc. in zoology and botany. The following year she received her professional teaching diploma. For five years Marg worked as a park naturalist at Elk Island National Park. She also taught part time at the University of Alberta in the Intoductory Biology program as a senior lab demonstrator. For 16 years Marg has been involved with natural history. She was the President of the Edmonton Natural History Club, ran a Junior Naturalist program, and helped to re-establish the Audubon Wildlife Films. Marg worked with the City of Edmonton Parks and Recreation Department as a city naturalist for two years, and for a year with the Provincial Museum on a special environmental project. Marg has also been involved with the Federation of Alberta Naturalists and served on their board as a Director for two years.

Marg Reine. (Photo: Marge Reine)

Marg has also been active in community service groups within the city. She helps with the homeowners and community league membership drives as well as the Heart Fund campaign. Along with two other couples she was instrumental in setting up a group for bereaved parents called Compassionate Friends. She arranged group meetings, speakers, and workshops for the organization as well as speaking with other service groups on the topic of grieving.

Marg is involved as a parent volunteer in many capacities with

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both elementary and junior high schools. She is involved in a number of organizations for her own interest including a variety of natural history organizations, the University Women's Club, the Alberta Association for Bright Children, the Medical Wive's Club, and the Key Communicators with the Edmonton Public School Board. In her spare (?) time Marg enjoys a variety of activities; cross-country skiing, snowshoeing, cycling, swimming, and hiking. She has a number of hobbies that include photography, sewing, and philately.

Indeed, Marg Reine is a personification of those of whom we say, "If you want to get something done, go to a busy person."

Author's Address:
Box 18, Site 6, R.R.2, Winterburn, Alberta
TOE 2NO.

The Clifford E. Lee Nature Sanctuary—A Decade of Achievement in the Marsh

Marg Reine

In 1976 the president of the Canadian Nature Federation, Dr. George Scotter, called Edmonton area naturalists together to propose the establishment of a nature sanctuary in the Edmonton vicinity. It was to be owned by the CNF and managed by a local volunteer committee. Ten years ago it would have been hard to envisage what has now developed into the Clifford E. Lee Nature Sanctuary.

Following this initial meeting with Dr. Scotter a ten member organizational committee chaired by Ludo Bogaert was formed to locate an area near Edmonton that contained a variety of natural features. After months of searching, four sites were proposed. Of these a 56 ha site near the Devonian Botanic Gardens was finally chosen for its biotic diversity and easy accessibility to visitors. Some of its interesting natural features were documented by Dr. Lu Carbyn and Deirdre and Graham Griffiths. Dr. Ross Hodgetts then wrote a proposal for the property which was presented to the Clifford E. Lee Foundation, the funding body. Negotiations with the foundation board, led by Don Goodwin, concluded in 1977 with Mrs. Lila Lee, widow of the late Clifford E. Lee, and the foundation board accepting the proposal and granting the new committee $120,000 to purchase the land. This land was to be leased to the CNF with the Clifford E. Lee Foundation holding title until such time as the foundation felt that management of the sanctuary was satisfactory and would transfer the land title to the CNF. A management committee, composed of volunteer representatives from ten local and natural history organizations subsequently began their new task of managing this quarter section of land.

The initial management committee, chaired by Dr. Lu Carbyn, established a series of objectives and guidelines and designated the Yellow-headed Blackbird as the official sanctuary logo. Financial arrangements were set up with operational funding provided by the CNF while the capital funding was the responsibility of the management committee. The main goal of this committee in the first few years was to undertake research studies on the biophysical properties of the sanctuary. The varied topography of the new sanctuary, located in the Devon Sandhills, is composed of wetland surrounded by open meadows, jack pine bluffs, willow-fringed potholes, and aspen parkland. The committee felt it was imperative to know what there was to interpret before a management strategy could be developed. In 1978 the Alberta Environment Research Trust Fund provided a grant to begin the inventory which included a limnology study by Dr. Lynda Corkum followed by a botanical-ornithological study by Dr. Graham and Deirdre Griffiths in 1979. The official opening was held in October 1980 with Mrs. Lila Lee dedicating the sanctuary. This was the start of two exceedingly busy years. Dr. Jim Butler's Interpretive Concept Plan and the insect survey by Dr. Griffiths added to our research library. Dave Hervieux completed a mammal survey in 1981 giving the management committee a solid basis for the development of a resource management plan and an interpretive program. At this point the management committee was on track with the initial five year plan.

The early 1980's saw the undertaking of several complicated projects including development of a trail system, building an interpretive sign, production of a slide-tape program describing the aesthetic aspects of the sanctuary and the difficult project of funding and building the three kilometre boardwalk system. Throughout the next few years a variety of grants from different sources provided us with summer students, more interpretive signs, completion of fencing requirements and the development of a parking lot. In 1982, the management committee, with the help of the Nature Conservancy of Canada, purchased another quarter section of land to the north of the original parcel making the sanctuary a full half section.

Interpretive plan development and resource management have become the main focus of efforts in the last four years. With regards to interpretation, more trails were created, interpretive signs erected and, in 1985, the first self-guiding trail pamphlet was written, complimenting a previous pamphlet describing the history and birds of the sanctuary. The interpretive program began offering workshops on the ecological communities of the sanctuary and the slide presentation and display board were used in a variety of events to acquaint the public with the sanctuary and its goals. Visitor use of the sanctuary increased significantly during this period with over 2000 visitors recorded during the 1987 season. Lately, the interpretive plan has shifted from what type of program the committee is developing to what type of user group already has a developed program and could use the sanctuary. Many organizations, such as local schools and community groups, utilize the sanctuary with the understanding that the use be compatible with the goals of the sanctuary.

The resource management planning began initially with the monitoring of photo-point areas set out by the Griffiths in their botanical study. Decision on the type of resource management scheme to follow was always controversial with many varied opinions, however, a general

Mallard nest and eggs.
(Photo: Jim R. Salt)

consensus of active management was chosen because of the closed nature of the sanctuary. With input from a variety of people involved with environmental management a resource plan was set up to cover many aspects of the sanctuary including those described below.

A large open meadow, used for years as a hay field, was threatened by successional growth of willows and poplars. To preserve its unique flora and avifauna it was decided to actively burn the meadow. The Northern Forest Research Centre provided the expertise, equipment and monitoring for a burn in 1985. Along with two subsequent burns the edge succession has been halted, however, the central portions still maintain some large sucker growth.

Ducks Unlimited has spent some time developing a program to control water levels in the marsh to maintain habitat diversity and encourage the waterfowl population. Implementation should occur in the near future with control and monitoring of the marsh handled by DU and upland management shared jointly by the sanctuary and DU.

The northern quarter section has always been used as a pasture and it was decided to maintain the area as such so it could be used for interpretive purposes.

In cooperation with the local Fish and Game Association the sanctuary embarked on a program of Canada Goose recovery for the area. This program included placing nesting bales in the marsh in 1983 and releasing 180 banded goslings and yearlings in 1983 and 1984. Each year since these releases there have been successful nesting pairs and significant numbers of geese on the marsh and in nearby waterbodies. Other waterfowl have benefitted from loafing logs and duck boxes placed around the sanctuary. Bluebird and swallow boxes erected in the sanctuary have also had good success.

Planning and implementing the interpretive program and resource management plan were not the only challenges presented to the management committee. A number of obstacles and problems have arisen over the last ten years, some of them quite worrisome and others just a matter of course. The first was a proposal by Calgary Power in 1977 to place a power line over the north boundary. A letter was written to the Energy Resources Conservation Board objecting to the power line, which was subsequently placed in an alternate position. In late 1980 a land subdivision proposal by the west border neighbour caused concern. Appeals were made to the county and the Alberta Planning Board. Fortunately the subdivision was stopped. Other problems included trespassing causing damage, and tax problems. For the latter a proposal submitted to the Alberta Local Authorities Board resulted in the sanctuary obtaining tax exempt status, the first time an area with the status of the sanctuary has received this type of exemption. The most serious problem, which has yet to be resolved, involves an oil company who received a lease for deep oil and gas rights beneath the sanctuary. After weathering these storms it was encouraging to be included in the Environmental Law Centre's Guide to Private Conservancy as one of the first volunteer management groups to have experienced and successfully dealt with many of these problems.

The work undertaken by the management committee of the Clifford E. Lee Nature Sanctuary has been challenging and the goals thus far attained, rewarding. The people involved with the committee were committed to environmental conservation and have dedicated many hours of time to make the sanctuary the success it has become. To work with people that are willing to make this type of commitment is extremely satisfying.

Author's Address:
322 Routledge Road, Edmonton, Alberta
T6R 1E3.

Additional Interesting Plant Records from a Peatland in North-Central Alberta

J. Derek Johnson

Johnson (1987) described a peatland in north-central Alberta which had a number of interesting plant species growing in it. Subsequent investigations in 1987 at the Goose River site, 38 km southeast of Valleyview, revealed a couple of additional records and new information on a few of the original ones.

Wood Rush (Luzula rufescens) was found to occur more extensively along the seismic cutline in the northern portion of the area than originally detected in 1986. Rather than occurring in two isolated clumps, it now appears that the plants are scattered all along the edge of the cutline between what appeared initially to be two discrete groupings. The population at the west end of the area could not be relocated in 1987. Bent Sedge (Carex deflexa) appears to have become well established locally on the disturbed soil of a seismic cutline at the west end of the area.

Two new discoveries are worthy of more than a passing interest. Dwarf Bilberry (Vaccinium caespitosum) was found growing abundantly on the exposed clay soil of an abandoned oil well drilling site. This species is normally found in coniferous woods and on open slopes (Moss 1983). It occurs commonly in Alaska, the Yukon Territory, and throughout much of British Columbia, but in the rest of Canada, east of the British Columbia-Alberta boundary, the species has not been found north of 57 latitude (Scoggan 1979). The Goose River site is one of the more northerly locales for the species in Alberta (Moss 1983). Dwarf Bilberry normally flowers in June. The plants produced copious quantities of small but delicious berries in early September.

Mountain Club-moss (Lycopodium selago) was the other new discovery of 1987. It is a species of damp mossy tundra, alpine slopes, and subalpine woods (Moss 1983). A circumpolar species, it is wide-ranging in arctic and alpine areas, but uncommon in forested areas (Porsild and Cody 1980). Goose River is one of only two areas in Alberta (the other being the Swan Hills) where the species has been found away from the mountains or the Canadian Shield in the extreme northeastern corner of the province (Moss 1983). One large and a few small plants were found, again growing on the exposed soil of the abandoned well site.

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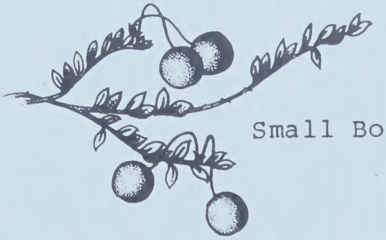
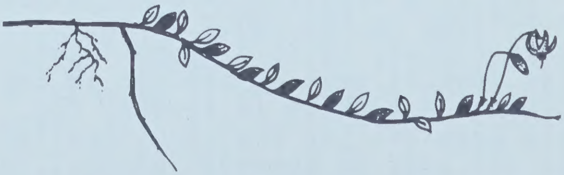
Author's Address:
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.



Small Bog Cranberry



An Interesting Location for a Dark-eyed Junco's Nest

J. Derek Johnson

During the summer of 1987, in the course of analyzing permanent ground vegetation sample plots in the forest wetland drainage study I am currently involved in, a Dark-eyed Junco's (Slate-colored race) nest was found near one of our sample transects.

The particular site we are working in is a treed fen located along a tributary of Wolf Creek, 16 km S of Highway 16, along the Wolf Lake Road, SE of Edson. The site is dominated by tamarack with a minor component of black spruce. Prevalent understory shrubs include swamp birch, bog willow, and Labrador tea. The most widespread herbs are water sedge, prostrate sedge, and swamp horsetail. Sphagnum warnstorfii and Tomenthypnum nitens are the predominant mosses.

Godfrey (1986) states that the Dark-eyed Junco "nests on or near the ground, the nest usually concealed under vegetation, behind tree roots, or under a fallen tree; often in a cavity in a steep slope; sometimes in the roots of an upturned tree, or in a stump." While the general nesting habitat in the present situation is typical for the species, the specific location of the nest is somewhat unusual, if Godfrey can be used as a guide. The nest was located almost in the centre of a hummock of peat moss (Sphagnum warnstorfii), barely 15 cm above the water table. The entrance to the nest was on the south side of the hummock, about 15 cm from its summit, and there was a short tunnel of about 10 cm in length before the actual nest was reached. The nest appeared to be lined primarily with rootlets and bits of sedge.

The nest was first found on May 21 while surveying one sample transect for winter damage. It would likely have been overlooked altogether were it not for the fact that a bird was seen flying from the hummock. It remained in a nearby tree issuing an incessant "chit chit chit" alarm call typical of the Dark-eyed Junco. This aided in the locating of the nest. No further observations were made at this time as to whether or not there were any eggs in the nest.

The site was returned to on June 18, at which time an alarmed bird again took flight into a nearby tree. This time it was easy to tell that there was activity in the nest as we could hear sounds emanating from it. We could not see directly into the nest as it was well concealed in darkness, but by relecting sunlight off the mirror of a compass we were able to determine that there were five young birds in the nest. Fearing that we were disturbing the area excessively, we left the site at this point. A return trip to the area at the end of August revealed no sign that the nest had ever even been occupied.

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Author's Address:

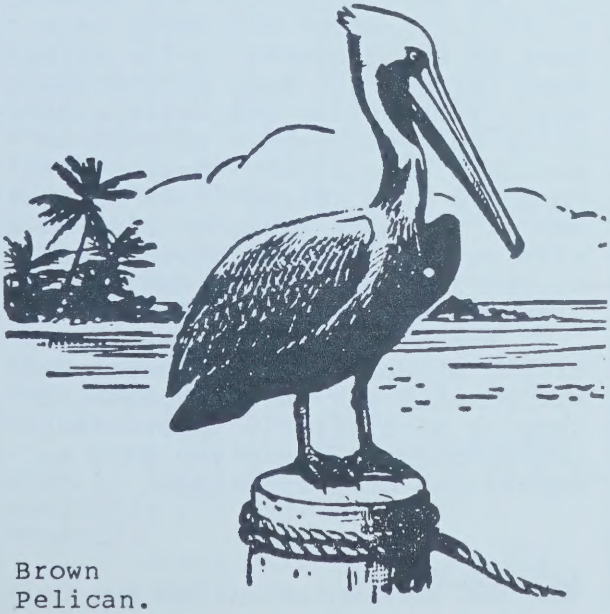
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.

A Birder's Glimpse of Florida

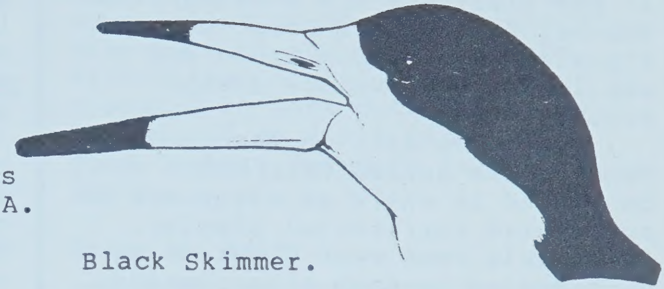
Lloyd Lohr

During February 1988, I was privileged to accompany a naturalist group touring southern Florida. This trip was led by former Florida resident, Dr. James Butler, Dept. of Forestry, U. of A. and assisted by graduate student Glen Hvenegard. At this time of year, local bird populations are swelled by winter visitors and the first of the spring migrants, such as warblers, passing through.

Most of the parks and sanctuaries are well set up with boardwalks and signed trails for easy access to facilitate sighting and identification. The first couple of hours on Anhinga Trail in Everglades National Park produced 23 new species for me. Most of this part of Florida is as flat as a table top, only a few metres above sea level, and covered most of the year with water, over a porous limestone base. This, combined with a lush and varied vegetation, produces ideal habitat for wading and aquatic birds.



Brown Pelican.



Black Skimmer.

Egret species are: Common, Snowy, Cattle and Reddish. Our old friend, the Great Blue Heron is everywhere, along with his relatives, the Great White, Louisiana (Tri-coloured), Little Blue and Green. Both Yellow-crowned and Black-crowned Night Herons are common as well as Wood Stork, White Ibis and the less common Glossy Ibis. Sometimes exotic waders like Roseate Spoonbills are seen and one flock of Flamingoes in semi-captivity was noted. Fish-eating birds such as Anhinga (Water Turkey) and Double-crested Cormorant get their feathers soaked when swimming so are mostly seen with wings spread out drying off in the sun. Other fishers are Brown and White Pelicans, Ospreys and Belted Kingfishers.

In the freshwater marshes the only Grebe noted was the Pied-billed, but American Coots were common along with their relatives the colourful Purple Gallinule and Common Gallinule. Vultures, both Turkey and Black, constantly ride the thermals and once we were thrilled to see a Swallow-tailed Kite gracefully soaring with them.

Ground that is a few cm higher will support tree growth and these are known as hammocks. Here the plentiful Red-shouldered Hawk nests. Common in the treetops are White-eyed Vireos, heard more than seen, with its distinctive "Quick, pick up the beer, check"; Blue-gray Gnatcatcher and Palm Warbler.

Sometimes seen or heard are Solitary Vireo, the tail wagging Prairie Warbler, Yellow-throated Warbler, Myrtle Warbler, Common Yellowthroat and Catbird. Common in the clearings are Mockingbirds, Robins, Phoebes and Great Crested Flycatchers. Common Crows and the smaller Fish Crows are always around.

Also resident in Mahogany Hammock are Barred Owls which can be called in where we witnessed an aggressive territorial display. Other owls seen were 2 Burrowing Owls bowing to each other beside the runway at Miami airport. At Flamingo was an Eastern Screech Owl looking out a hole in a Coconut Palm, calmly posing for excited photographers.

Around Blue Springs we were thrilled to see Manatees and many kinds of fish. New birds there were: Parula Warbler, Black-and-white Warbler, Tufted Titmouse, Carolina Wren and Red-bellied Woodpecker. Pileated and Downy Woodpeckers and Ruby-crowned Kinglets were in the trees and Mockingbirds and Loggerhead Shrikes on the wires.

On the beaches were Ring-billed and Laughing Gulls, Willets, Sanderlings, Western and Least Sandpipers, Short-billed Dowitchers, Dunlins, Ruddy Turnstones, Oystercatchers and Greater Yellowlegs. Terns sighted were: Forster's, Royal, Caspian and Sandwich. Most interesting were flocks of Black Skimmers with their long bottom bill for scooping up food as they fly close to the water surface. Regularly sighted ducks were: Red-breasted Mergansers, Wood Ducks, Shovelers, Wigeons, Pintails, Blue-winged Teals, some Mallards, and new to me, Mottled Ducks.

At Corkscrew Sanctuary we saw new birds: Pine Warbler and Yellow-bellied Flycatcher. We watched a feeder that attracted Cowbirds, Grackles, Redwings, Bobwhite Quail, Brown Thrasher, Cardinals and finally a Painted Bunting. Other raptors were: Bald Eagle, Red-tailed and Short-tailed Hawks, Peregrine Falcon and Kestrels. A fortunate sighting was the Limpkin, a rare long-legged, long-billed bird that feeds on snails. Exotic imports seen were two Hill's Myna,a Macaw, and of course European Starlings and English (House) Sparrows.

Besides the plentiful Mourning Doves, we saw White-crowned Pigeons and Ground Doves. Down by the ocean, a new sighting was a Magnificent Frigatebird. During our travels it was good to see familiar birds like Tree Swallows, Barn Swallows, Purple Martins, flickers, Yellow-bellied Sapsuckers, Blue Jay, Hermit Thrush, Solitary and Spotted Sandpipers, Chipping Sparrow and Clay-coloured Sparrow. The final tally came up with 126 different species of birds, of these, 46 were new additions to my life list.

In our travels we sighted Raccoons, Wild Pigs, Gray Squirrels, Otter, Armadillo, Marsh Rabbit, White-tailed Deer and on Big Pine Key, the diminutive Key Deer. Alligators of all sizes were seen including a brood of forty young ones with the mother on guard. Six different kinds of turtles were tabulated and nine different species of snakes were seen on sunny banks, in the water, down burrows and dead on the road. Zebra Butterflies and White Butterflies were everywhere as well as abundant mosquitoes. Gambusia or Mosquito Fish (bless them) are just one of the many kinds of fish in a wide variety of habitats. Tree frogs, lizards, anoles and huge grasshoppers were seen.

Add a varied assortment of trees, shrubs, exotic flowers and air plants, mix in the congenial company of similarly interested companions and truly you have an experience of a lifetime.

Author's Address:
Box 1414, Settler, Alberta TOC 2LO.

F.A.N. NEWS

Fish and Wildlife Advisory Council Report, 1987

Only one meeting of the Fish and Wildlife Advisory Council was held in 1987. F.A.N.'s position on game ranching was made clear at this meeting.

The following important business was also discussed:

-the Indian Association is no longer represented on the Council. This will make future efforts at involving natives in wildlife management issues even more difficult.

-Caribou Restoration Plan. By June, monitoring of radio-collared cows and various land management and public education components of the plan had been initiated.

-Bucks for Wildlife funding of major habitat development and enhancement projects in the Eastern Irrigation District is planned over the next three years.

-Game Ranching. On the motion "that Game Ranching be allowed only on privately owned land, Indian Reserves and Metis settlements," the vote was For-11, Against-8, Abstain-2. So it is clear that there is still much opposition to the implementation of game ranching in Alberta.

-Hunting of coyotes and foxes. A motion on a regulation that places some restrictions on when and where hunting of coyotes and foxes with hounds is allowed was passed by the Council.

-a Grizzly Bear Management Plan is being developed and will be available for review by the Council.

-the A.W.A. report on the Fish and Wildlife Advisory Council (Wilderness Alberta Vol. 17, Spring 1987 issue) was discussed by the Council. Although the article implies that F.A.N. might be considering withdrawing from the Council, I believe we can still have some influence on the actions of Alberta Fish and Wildlife from within the Council, but we must be prepared to work outside of the Council if we don't find it a satisfactory forum on certain issues.

David M. Ealey

Environmental Coordinator Summary of Activities, 1987

PRIORITIES

For the year of 1987, the O.E.C. groups assigned a set of priority concerns for the Environmental Co-ordinator to be working on through the year. The work with these subject areas covered a broad spectrum from advocacy and research, to brief preparation, meetings and liaison with interested groups and individuals. These priority areas were:

* National Parks.
* Government Policies on grazing lease and Eastern Slopes public land sales.
* Upper Oldman Watershed.
* South Castle and Waterton Biosphere Reserve.
* Provincial Management of Wilderness Dependent Species--the grizzly bear and the threatened woodland caribou.

Also during 1987, the Environmental Co-ordinator worked as a member of the National Save South Moresby Committee, The Alberta Environment Steering Committee and continues to provide the secretariate service for the Friends of the Oldman River Association.

ACTIVITIES

In carrying out the various O.E.C. functions and programs, several specific topics of environmental/conservation concern were worked on during 1987. Work on several of these will continue on into 1988. The following are some examples of these.

Annual General Meetings
-participated in the annual general meeting and provincial conferences for the Alberta Wilderness Association (April 3-5, Edmonton), and the Federation of Alberta Naturalists (Jan. 24-26, Calgary).

National Parks
-organized an issues and strategy workshop for O.E.C. groups (Feb. 7, Calgary). Met with federal government and opposition party representatives to discuss major national park concerns (Ottawa). Held a press conference on National Park concerns (May 11, Ottawa). Organized a major press conference and press release for Canadian conservation groups regarding Sunshine Ski Development expansion (April 7, Calgary).

Public Land Sales
-provided background information and up-to-date papers to assist organ-izations in keeping informed on the issues of selling off public lands through the 1984 Revised Eastern Slopes Policy and the 1985 Grazing Lease Conversion Policy.

Waterton-Glacier Biosphere Reserve
-provided research information and assisted in the co-ordination of North American conservation organizations to enable them to: (a) participate in major public hearings on the Canadian side of the Biosphere Reserve; and (b) keep abreast of major concerns affecting the future of this area (formal public hearings were held in Pincher Creek, August 18 and September 16).

Woodland and Mountain Caribou
-organized a strategy workshop for O.E.C. groups. Assisted C.P.A.W.S. in organizing speakers and a location for a public forum on woodland caribou (held in Calgary).

Diane Pachal

Clifford E. Lee Nature Sanctuary, 1987

The Clifford E. Lee Nature Sanctuary management committee has been active this year but our committments to grants and summer workers was relatively light. The year began with the continued discussions re: the Home Oil lease on the Sanctuary. Advice and assistance from the Environmental Law Society and the Canadian Nature Federation seems to have Home Oil in a wait and see position similar to ours. Home Oil's government grant for 1986 had expired so new tactics were likely being planned. The interpretive committee worked on new pamphlets with a grant we had received. All pamphlets are being revamped into a new format. A series of workshops was again planned with birds being the most popular. The general use of the sanctuary is up with conservative estimates of casual visits reaching over 2000 this past year. Again the Nature Centre and the Devonian Botanic Garden used our area for some of their courses and some local schools utilize the sanctuary for school projects. The display board and the slide program were busy this year beginning with Environment Week, a County of Parkland Water Management Conference, a local school program, a Provincial Museum promotion for local Natural Areas and the Canadian Nature Federation conference in Saskatoon. The sanctuary participated in a seminar on the Legalities of Private Conservancy put on by the Environmental Law Society. The Ducks Unlimited project for water management was scheduled to begin in the fall but was postponed until next summer. Our summer student for six weeks managed to keep the trails open and finish some odd jobs; including an inventory of equipment owned by the sanctuary and writing a brochure for the Pine Knoll trail. The management committee was asked to help with the Alberta Bird Atlas Project and the

Devon Christmas Bird Count people used the Sanctuary for one of their count areas. Home Oil and the seismic crews returned in the fall with their new strategies as predicted. Currently the community has managed to keep the seismic activity out of the area. Next year we hope to see more strides in the interpretive aspects of the sanctuary and will be attending to major site maintenance projects. Bill Jopling became the new chairman of the Management Committee.

Marg Reine

Wilderness, Parks and Natural Areas Committee Report, 1987

NATIONAL

Two New Parks. Federal Environment Minister Tom McMillan deserves congratulations for his efforts and leadership in the establishment of South Moresby National Park Reserve and Bruce Peninsula National Park.

Bill C-30. Mr. McMillan's package of amendments to the National Parks Act has been under heavy attack from the federal Alberta Tory Caucus, the Alberta government and exploitation-minded organizations such as the Jasper Chamber of Commerce. These opponents to the attempt to strengthen the Canadian national park system believe that there is too much emphasis on preservation and not enough on tourism development.

Sunshine Village Expansion Proposal. A second round of public meetings to discuss this issue will be held in late spring or early summer this year. In its earlier submission, F.A.N. argued that the proposal should be rejected on the basis of national park policy. But Alberta politicians have used this issue as a convenient focus for their ambition to change the fundamental role and purpose of national parks. Mr. McMillan is facing great pressure from his federal and provincial colleagues who represent Alberta.

Four Mountain Park Planning Program. Individual park management plans for Banff, Jasper, Kootenay and Yoho are expected to be given final approval this spring.

Some General Comments. At the Board of Directors meeting in Banff in May, 1987, I asked my fellow directors to what extent their local clubs were following and participating in national park issues. To my dismay, I learned that some clubs feel that F.A.N. is "looking after" these matters for them. That is a very dangerous assumption! Even if F.A.N. responds as often and as well as it can, it is only one voice. We will lose the battle for our parks to the forces of exploitation unless all F.A.N. members - corporate and individual - become involved.

Certainly, there are local issues that should be dealt with at the local level. And there may be some provincial issues that can be handled best by a provincial organization. But national parks belong to all of us and are the responsibility of us all. I do not expect everyone to be familiar with the myriad of detail that comprises an extended planning program. I do believe, however, that there is amongst the conservation community, a well-recognized set of attitudes, principles and values related to national parks. When those attitudes, principles and values are confronted by the kind of formidable challenge that has surfaced in Alberta recently, it is time to mobilize for their defence.

Bill C-30 and the proposed expansion of Sunshine Village are watershed issues. What is at stake is the very idea of national parks. Will our parks continue as an expression of our stewardship, as the last vestiges of our magnificent natural heritage, or will they be reduced to mere commodities in the supermarket of materialism?

I urge every F.A.N. corporate club and every individual member to write Mr. McMillan with support and to write their own M.P.'s with a sense of genuine feeling for the integrity of national parks.

PROVINCIAL

Natural Areas And Ecological Reserves. 1987 was a banner year. No doubt bolstered by the impetus of Wildlife 87, establishment of these areas proceeded at a remarkable rate. The provincial government deserves hearty congratulations for its major initiatives in this regard. Let's hope 1988 will be even more productive.

Wild Kakwa Wildland Recreation Area. As with the Bighorn W.R.A., enthusiasm over the announcement concerning the Kakwa must be tempered by the realization that the government has still not come to grips with the need to prohibit motorized travel and industrial development.

Upper Oldman River. The superb old growth forest is falling to the chainsaw. The provincial government established the Beehive Natural Area which included an immense region of about 800 ha of protected old growth. A lamentably token gesture.

Prairie Bluff (Corner Mountain). An unfortunate precedent occurred when the provincial government granted permission to Shell Canada to drill for natural gas in the Prime Protection Zone on the top of Corner Mountain. Now Shell has its sights set on yet another possible well in the untouched, upper reaches of Whitney Creek.

Highway 40. The Cabinet decision to open this road through Highwood Pass this winter indicates a disturbing lack of concern for wildlife. The government seems unaware of the importance many Albertans attach to the need to protect wildlife and habitat. It is time to remind them.

These are just a few of the issues with which F.A.N. is involved. Keep in mind that one of the most knowledgeable conservationists in Alberta works for us. As Environmental Coordinator for the Canadian Parks and Wilderness Society, the Alberta Wilderness Association and F.A.N., Diane Pachal is ready and willing to assist with information and advice. She can be contacted at: Office of Evironmental Coordinator, 455 - 12 Street, N.W., Calgary, Alberta T2N 1Y9. Phone: 283-1576.

Mike McIvor

Environmental Education Committee Report, 1987

The World Wildlife Fund's Operation Lifeline kits were the main project of the committee. There were 45 kits distributed to various schools and Nature Centres in the province as a pilot project. Most schools were very enthusiastic about trying the kit and seemed very pleased when they saw it. By next year we should have some input regarding the kits usefulness and/or acceptance. The bulletin display boards for the province's Nature Centres were also completed and distributed. F.A.N.'s slide tape program for use at conferences and shows has been finished. The program is self-contained using a Caramate System and can be projected onto F.A.N.'s new screen as well. The Federation also supported the program at Ministik Field Centre to provide two qualified instructors at their Nature Camps.

Marg Reine

Wagner Natural Area Society, 1987

- -official Marl Pond Trail opening ceremony held in June.
- -barbeque for Society members and guests held in September; 45 people attended.
- -publication of a quarterly newsletter begun in December.
- -a management plan done as a Master's thesis by a graduate student in the Environmental Design Faculty at the University of Calgary has been completed, defended and submitted to the

Society for implementation. It will be formally adopted at a future meeting.

- guidelines for research in the Natural Area are being developed using the management plan as a framework. The priority is to minimize the impact of any study conducted on the site.
- a program to monitor the status of rare plants (particularly some of the orchids) in the Natural Area is being considered.
- STEP student hired for the summer. Much accomplished, including site maintenance, public relations and natural resource surveys.
- natural resource surveys begun, expanded or completed in 1987: a bird checklist prepared and available; one of intensive survey areas for Alberta Breeding Bird Atlas Project (57 species with some evidence of breeding so far); mammals (water shrew); amphibians (tiger salamander); plants (vasculars, mosses, lichens, fungi) -71 species of fungi identified; terrestrial invertebrate study turning up many interesting results. Numerous new records for the province. Many groups remain to be worked on. The final list may total between 3,000 and 4,000 species; aquatic invertebrate study tentatively approved for 1988.
- County of Parkland now acting as booking agent for groups wishing to visit area.
- use of area increasing as it becomes better known in the community.
- lease obtained from County for Villeneuve Road extension. Access to it has now been closed off.
- preparation of an education kit for teachers is progressing.
- Canadian Council on Ecological Areas presented the W.N.A.S. with an award recognizing the work it has done in managing the Natural Area.
- representatives from the Society participated in the Environmental Law Centre's workshop on Private Conservancy in September.
- an information brochure describing the W.N.A. has been produced by Alberta Forestry, Lands and Wildlife.
- a welcoming sign, also listing some of the potential hazards to be found in the Area, is to be erected on site.
- flooding as a result of beaver activity is a current concern. The effects are being monitored for possible remedial action.

J. Derek Johnson

Report of FAN Representative to Public Advisory Committee, 1987

Due to budget cutbacks there were only seven meetings of the Renewable Resources sub-committee including a Forestry Land Use Workshop and the Annual Joint Meeting of P.A.C.

A comprehensive report on the Forestry Workshop can be obtained by writing Public Advisory Committees to Environment Council of Alberta, 8th floor, Weber Centre, 5555 Calgary Trail, Edmonton, Alberta, T6H 5P9 or phone 427-5792 (or dial "0" ask for Zenith 06075--toll free) and ask for the report on the Forestry Land Use Workshop of June 19, 1987.

The sub-committee participated in several minor workshops contributing to sectors of the Alberta Conservation Strategy.

The theme of the Annual Joint Meeting of P.A.C. was communication.

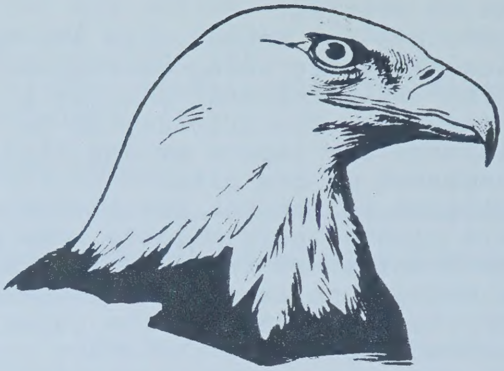
At our next sub-committee meeting we will discuss with the Alberta Forest Products Association their survey relative to forest management practices.

The steering committee on the conservation strategy has increased the pressure to get the sectoral background papers out. All of these are being reviewed in draft by the entire committee. One (Reserves for Nature) has been released; one more, also an E.C.A. staff product, on mediation/negotiation processes is almost out; the papers on urban environment and on agriculture are in press.

At the request of the steering committee, the Chairman of P.A.C. sent letters requesting cooperation to each member of cabinet. The response has been very gratifying, with only one minister believing her department to be irrelevant to a conservation strategy.

Following the publication of the National Task Force report, the steering committee began extensive direct consultations with the Hon. Ken Kowalski on the role of P.A.C. in the conservation strategy development and in the Round Table program. These continue with tolerable success.

Harvey Gardner



Birding British Columbia? Merlin Bed & Breakfast for Birders. For brochure and checklists, write: 3672 West First Ave., Vancouver, B.C. V6R 1H2. (604) 736-9471.

F.A.N. Membership Fees Are: Regular $15 per year; Supporting, $25 or more per year (with excess over $15 being deductible from your taxable income). This entitles you to a subscription to the Alberta Naturalist. Subscriptions to the Alberta Bird Record are $10 per year. If you wish to receive both publications, cost is $23 per year. Please check the appropriate box.

F.A.N. MEMBERSHIP -- Regular Member ☐ For ____ Year
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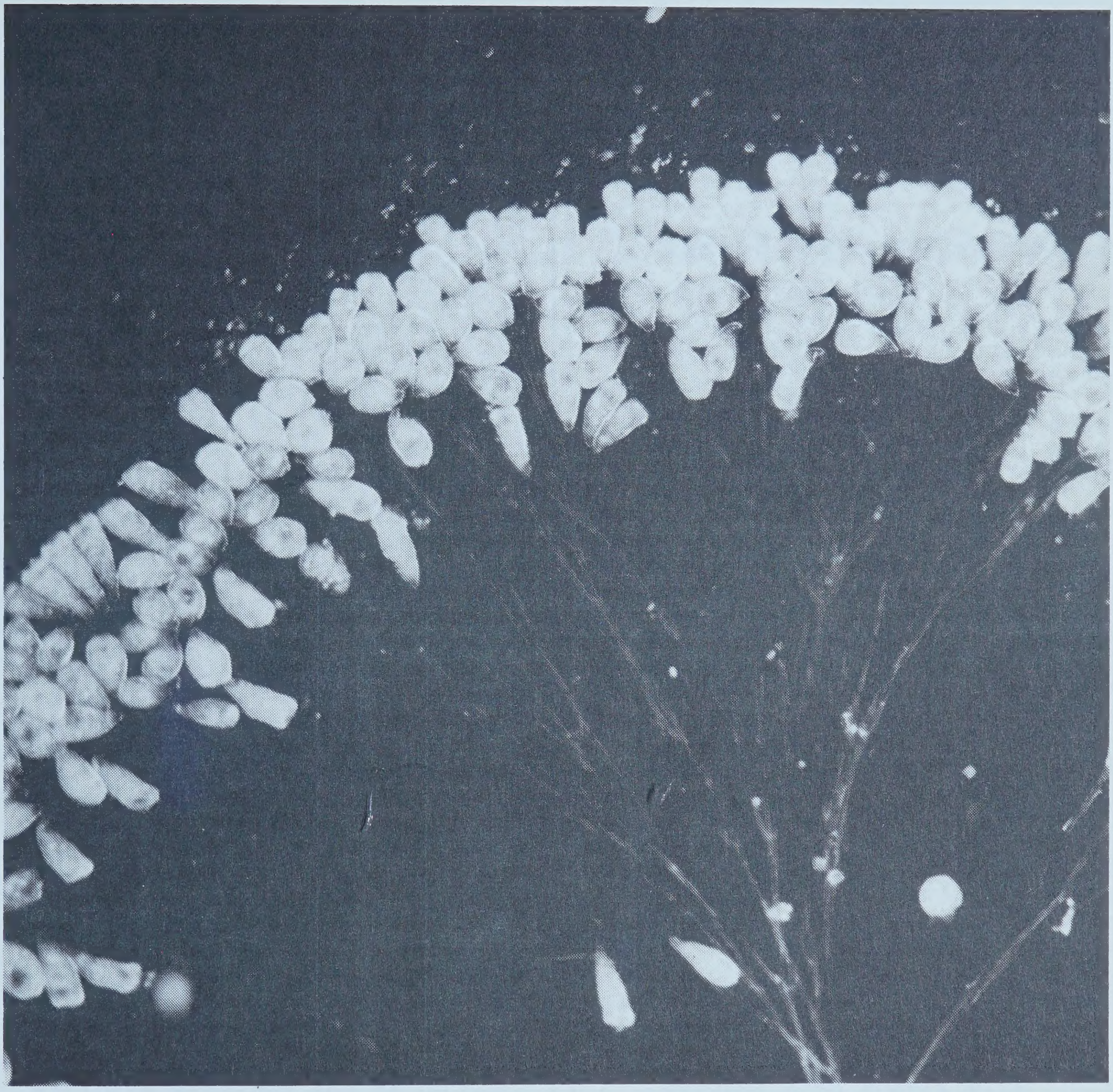

Zoothamnium is a single-celled animal that forms colonies which are often found attached to aquatic plants and can measure several millimetres across. _Zoothamnium_ is a ciliate with a ring of hair-like cilia around its rim. The cilia beat the water and draw in algae, bacteria, and smaller protozoa. In the photograph, these food organisms are visible around the edge of the colony. When disturbed, the colony will contract into a much smaller mass. Contraction is coordinated -- all individuals connected to a common stalk will contract at the same time. (Photo and caption by Tom Branch.)

CLUB NEWS

Lethbridge Naturalists' Society

The spring-summer field trip season has begun, and a list of scheduled trips follows. Leaders names are in brackets.

April 9-Breeding Bird Atlassers practice day at the Russell farm a few km southwest of Lethbridge (Mike Vandyk).

April 17-Keho Lake (Teresa and Doug Dolman)-waterfowl.

April 23-Outpost Lake Wetlands (Bob Hall). This is a designated natural area, and the Lethbridge Naturalists' Society is considering becoming a sponsor of the area under the "Volunteer Stewardship Program."

May 14-Animal Diseases Research Institute, west of Lethbridge (Peter Stockdale)-birding. Long-billed Curlew and Upland Sandpiper breed in this area.

May 28, 29-May Species Count (Mike Vandyk-birds, Derek Johnson-flowers).

June 4, 5-Waterton Park Summer Bird Count (Mike Vandyk).

June 18-Todd Creek area (Brigitte Byers)-flowers.

July 9-Crowsnest Mountain area (Alice Luchansky)-flowers.

July 23-Row Lake Meadows, Waterton Park (Janice Jellicoe)-flowers.

August 13-Kitsim and Antelope Creek Wetland areas (Ducks Unlimited projects)(Perry McCormick)-waterfowl.

August 27-West Castle area (Dennis Gaudet)-mushrooms.

September 11-Lethbridge Naturalists' Society Annual Picnic, at the Agriculture Canada Research Station picnic grounds.

Graeme Greenlee

Red Deer River Naturalists, 1987

January saw the efforts of our Past President, Sandy Murray, bear fruit when we were finally issued with a Licence of Occupation for the Butcher Creek Natural Area. Our A.G.M. will probably go on record as the longest meeting ever held by this organization. We were also treated to an excellent slide presentation on Africa by Mary Lore of Calgary.

In February, our executive agreed that it would be useful to establish an official liaison between our club and the Red Deer Fish and Game Association. This liaison has afforded the opportunity for both groups to work together in areas of mutual concern. Jan Edmonds, caribou biologist from the Fish and Wildlife Division, Edson, outlined the proposals for protecting the dwindling population of Woodland Caribou in northern Alberta. This topic was only one of many concerns that we were addressing at the beginning of 1987. The other was the grazing lease conversion policy. Ours was only one of many cries of public protest, and a committee of Michael O'Brien and Fred Schutz diligently prepared a very thorough brief that was sent to the Minister.

We dealt with more issues in March, including game ranching, the possibility of our club acquiring land through bequethment and the possible de-listing of the Gaetz Lakes Sanctuary. We donated $500.00 to the Medicine Wildlife Rehabilitation Centre for the construction of a flight training cage, and some of our members agreed to assist with upcoming Ruffed Grouse and Great Blue Heron colony surveys. Wildlife '87 got off to a great start when a panel of speakers including Gerry McKeating, Jack Clements, Ron Bjorge, Doug Rumsey, and Sandy Murray outlined national, provincial, regional, and local Wildlife '87 activities. Several of our members signed up for the wildflower phenology survey, and several of us once again volunteered to judge at the regional science fair. March also saw the initiation of the Breeding Bird Atlas Project.

The executive was greeted with the somber news at our April meeting that our club should be using liability waiver forms at all our outings. The good news of the month included a letter advising us that a moratorium on grazing lease conversions had been implemented. The naturalists' club helped coordinate a successful Wildlife '87 poster contest. Outings coordinators Bill Nesbitt and Anna Robertson organized an impressive summer outings schedule. Field trips ranged from a day of tale-swapping at Nesbitts, to F.A.N. meetings, to the May Species Count, to a horse trip at Bates Bar J Ranch, to trips further afield. By the end of April our cooperative project with the Kerry Wood Nature Centre, the Backyard Wildlife Habitat Program, was off the ground with the publication of a small booklet entitled BACKYARDS FOR WILDLIFE. The first printing of 100 copies is sold out, and we are now producing a revised edition. Dr. Peter Achuff afforded us a rare glimpse into a national park in China at our April general meeting.

May was a full month, with Jim Robertson and Sandy Murray meeting with the Canadian Wildlife Service, impressing upon them that the G.L.S. ought not to be delisted. I am happy to report that they decided against this proposed move, and the sanctuary remains a bona fide migratory bird sanctuary. A very popular Wildlife '87 Film Festival passed through town in May, and our club was asked to nominate central Albertans for local initiatives awards. Slim Davis, Bob Scammel, Mrs. Schuler, Dr. Bill Parson, Dorothy Broadbent, Fred Schutz, Helen Harris, Ron Bjorge, Jim Potter, Bob Skarra, Maxine O'Riordan, Dr. Charley Bird, Martha Kostuch, Charlie and Winnie Ellis, Anna Robertson, Gary Ross, and Bill Nesbitt were among the deserving recipients.

The summer was busy with outings, mosquitoes, and other pressing issues. Tom Pierce took over as compiler for the Alberta Bird Record. Our club made a rational presentation to City Council regarding the need for an ecologically sound method of mosquito abatement. We are happy to report that a biologist was hired during the latter part of the summer to examine potential methods of biological control, and that his recommendations have closely followed those put forward by this organization.

Our Habitat Steward Program was off and running with the commitment of Alberta Government Telephones to finance the signs. The first installment got the first batch of signs off the press, and the most recent contribution has enabled us to get into the program full swing.

Largely due to the efforts of Mike McNaughton, our club signed a Private Conservancy lease with a farm couple near Lacombe to protect 20 acres of rare wetland habitat. The first of its kind in the province, this event attracted national publicity and the story was even carried in International Wildlife.

The "Kestrel Project," a cooperative project between our club and TransAlta Utilities, was successful, with 4 out of the 5 boxes attracting kestrels. TransAlta Utilities published a small booklet describing the project, which is available, free-of-charge to anyone who is interested in obtaining a copy.

At our October meeting, we were advised that Kerry Wood had been nominated and was to be awarded the Order of the Bighorn. Our general meeting was a delightful slide production by Cleve Wershler as he took us through the deserts of Arizona with his program "When It Rains It Blooms."

By November, it was obvious that the Oldman River Dam was one of the most pressing environmental issues in this province, and we rallied behind the Friends of the Oldman group by providing both moral and financial support. We became embroiled in a smaller-scale battle with Alberta Environment over a drainage project near Rimbey. Alberta Fish and Wildlife Division, Red Deer Region invited input from the Red Deer River Naturalists on Hunting Regulations. We also attended meetings of a newly-established, ad hoc Wildlife and Tourism committee. We enjoyed a presentation by the Natural Areas staff at our General Meeting.

In December we awarded the first Habitat Steward sign to the deserving Dorothy and Geoff Hazlett of Red Deer. We also, with the K.W.N.C., pulled off an even bigger and better Christmas Bird Count. Over 240 people in 17 count circles counted more that 10,000 birds of 51 species. Murray Mackay increased participation in the Ponoka area from 2 participants in 1986 to 92 in '87.

I would like to thank Dorothy Murray for continuing her fine tradition of producing excellent newsletters. Three members of our board have retired. Thank you to our able Treasurer, Rick Leyland for a job well done, and to two very long-time, well-known members, Fred Schutz and Maxine O'Riordan. Their collective 30 years of service to the Red Deer River Naturalists are commendable.

We leave behind a centennial year that inspired all of Canada. We face a future of exciting projects and changes. But we also face a future of short-sighted policy makers, a largely apathetic public, politicians, businessmen, and economists who can see no further than economic gain. We face a global environment that day by day edges closer to destruction. Each and every one of us must share the responsibility of ensuring that this globe is still left for our children's children.

Myrna d. Pearman

ANNOUNCEMENTS

Robert Lister Collection

A special natural history collection honouring the late Robert Lister has been started at the Tofield Municipal Library.

The collection focuses on birds, wildlife and conservation within Alberta and in the prairie provinces.

In his fifty-year career as an Alberta naturalist, Robert Lister spent a great deal of time at Beaverhill Lake, known worldwide as a major staging and nesting area for migratory shorebirds and waterfowl.

We would appreciate any donations of books, periodicals, monographs, pamphlets, etc., relevant to the above-mentioned topics to include in this special collection, and would be happy to arrange for pick-up in the Edmonton area, or to assist with postage costs.

For further information about the Robert Lister Collection, please contact Elizabeth Hubbard, Librarian, at the Tofield Municipal Library at 662-3838, or write to Box 479, Tofield, Alberta, TOB 4JO.

Birdathon Fund Announces Bird Project Grants

Five bird projects across Canada will be the recipients of grants announced by the James L. Baillie Memorial Fund. The Fund supports projects that involve volunteer birders and naturalists in bird research and preservation anywhere in Canada.

A major share of the grants will go to the popular breeding bird atlas projects. The Canadian Nature Federation will receive $500 to aid in the design of data cards and a participants guide for the proposed atlas of the Northwest Territories. A grant of $1000 was awarded to the Alberta Bird Atlas, a project of the Federation of Alberta Naturalists, based at the Provincial Museum of Alberta in Edmonton. The Maritimes Breeding Bird Atlas, located at the Nova Scotia Museum in Halifax, also receives a grant of $1000 for its bird atlas of the three maritime provinces.

The fund also announced a special program of grants, available in 1989, for remote travel by atlas volunteers in Canada. Anyone who is interested in application information should write to the James L. Baillie Memorial Fund: Box 160, Port Rowan, Ontario, N0E 1M0. The deadline for applications will be 31 December 1988.

Environmental Protection and the Canadian Constitution

Editor: Donna Tingley

In April 1987, Lawmakers, regulated industry and environmental advocates were invited to a symposium to grapple with the issue of jurisdiction and responsibility for the environment within Canada's federal system and to offer constructive proposals for reform. The proceedings of this event include:

* a jurisdictional primer on natural resource and environmental law
* analysis and discussion on current approaches to intergovernmental and interjurisdictional conflict
* evaluations of current policy and practice
* directions for the future

This book is a valuable resource for everyone involved in the making and implementation of environmental law and policy.

This publication is available at $29.95 from: Environmental Law Centre, 202, 10110 - 124 Street, Edmonton, Alberta T5N 1P6.

Atlas of the Rare Vascular Plants of Ontario

Pryer, K.M., and G.W. Argus, eds. 1987. Atlas of the Rare Vascular Plants of Ontario. Part 4. National Museum of Natural Sciences, Ottawa.

The National Museum of Natural Sciences in Ottawa has now published the fourth and final installment of Argus, G.W., K.M. Pryer, D.J. White, and C.J. Keddy, eds. 1982-1987. Atlas of the Rare Vascular Plants of Ontario. Four parts. National Museum of Natural Sciences, Ottawa. (looseleaf). The publication of Part 4 of the Atlas concludes a project that was initiated with Part 1 in 1982 (Argus, G.W., and D.J. White, eds.), and followed by Part 2 in 1983 (Argus, G.W., and D.J. White, eds.), and Part 3 in 1984 (Argus, G.W., and C.J. Keddy, eds.).

During the project approximately 1000 candidate species were studied. From these a total of 542 species in 91 families were deemed rare and are included in the Atlas. More than sixty contributors were involved in the project and provided their expertise in prepar-ing the species accounts. Each rare species account in the Atlas includes: scientific and common names, Ontario dot maps based on verified herbarium specimens, North American range maps derived from various published literature sources, habitat, rare status elsewhere, and pertinent notes and references.

The Atlas is available from: Rare and Endangered Plants Project, Botany Division, National Museum of Natural Sciences, P.O. Box 3443, Station 'D', Ottawa, Ontario K1P 6P4. To cover postage and handling: In Canada: $5; Foreign: $6 US. Cheque or money order payable to the Receiver General for Canada. A limited number of the earlier parts are still available and will be included for new recipients of the Atlas.

The Rare Vascular Plants of Canada—Our Natural Heritage

Soon to be published: Argus, G.W., and K.M. Pryer. 1988. The Rare Vascular Plants of Canada - Our Natural Heritage. National Museum of Natural Sciences, Ottawa.

Approximately 1000 species are on this list. For each species the following information is included: scientific name, references, global status, national status, provincial and/or territorial status, and U.S. state status. A Canadian priority rank is assigned to each of the species and, when available, the COSEWIC (Committee on the Status of Endangered Wildlife in Canada) status is provided. A North American map accompanies every species to indicate its known distribution by province and/or territory and state. This list will be published in cooperation with The Nature Conservancy, Arlington, Virginia. Those who are interested in being placed on a mailing list should write to the above address.

Society of Canadian Ornithologists

The Society of Canadian Ornithologists (SCO) was formed in 1982, in conjunction with the Canadian hosting of the XIX International Onithological Congress in Ottawa. Since its inception our membership has grown to over 150 members and the Society now publishes Picoides, the Bulletin of the SCO, twice a year.

The objectives of the SCO are to promote ornithology in Canada, whether it is enjoyed by amateurs or professionals, and to provide a common voice and information exchange for persons interested in birds.

Please give your support to this organization by taking out a membership. Send your remittance ($10.00) to Philip Stepney, Provincial Museum of Alberta, 12845-102 Avenue, Edmonton, Alberta T5N OM6.

Bird Banding Workshop

Following last year's success, the Beaverhill Bird Observatory and the Town of Tofield (close to Edmonton) are hosting the second annual Western Canada Banding Workshop and Conference, August 12-14, 1988.

The intention is to promote bird banding in Western Canada, to establish rapport among active banders, and to improve banding methods. Activities will include scientific presentations, "hands-on" workshops, and field trips to Beaverhill Lake with local experts.

All bird-banders, potential bird-banders and other interested persons are welcome. For more information, contact the Beaverhill Bird Observatory, P.O. Box 4943, Edmonton, Alberta T6G 5G8.
Ph: (403) 434-7446.

Atlas of the Breeding Birds of Ontario

Ontario is an immense landmass; over 1600 km east to west as traversed by spring hordes of Tundra Swans, and an ever greater distance north to south as the Red-throated Loon flies. From the Carolinian forests of the south to the tundra and salt marshes of the Hudson Bay coast a great variety of ecosystems provides breeding habitats for a fascinating diversity of birds.

After 5 years and 100,000 hours of fieldwork by a network of enthusiastic and expert naturalists, 400,000 field records have been amassed to provide the first up-to-date and comprehenseive picture of the distribution of the birds that nest in the province. The Atlas of the Breeding Birds of Ontario, sponsored by the Federation of Ontario Naturalists and the Long Point Bird Observatory, is the result of that outstanding project.

The Atlas is over 600 pages long, has a hard cover, and is filled with facts and maps. The dust jacket is illustrated by Robert Bateman. Inside, 292 species are beautifully illustrated, and 292 computer-produced maps are attractively presented in two colours for easy interpretation More than 80 expert ornithologists have written the text. They provide insight into each species' history, status, distribution, abundance and detectability, making the Atlas an invaluable reference. The book is compiled by Michael D. Cadman, Paul F.J. Eagles and Frederick M. Helleiner.

Sections of the Atlas explain how complete coverage of the province was achieved, introduce Ontario's biogeographical regions and discuss the variety of species in different parts of the province. A unique feature of the Atlas is a section on the potential applications of the data to scientific analysis and land-use planning.

Ordering Information

List Price: $53.50

Order From:
University of Waterloo Press
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Waterloo ON Canada N2L 3G1
(519)885-1211, ext. 3369

NOTES AND NEWS

Peary Caribou Declining in the Canadian North

Peary Caribou - the small "Rudolph-like" reindeer found on the High Arctic islands of Canada continue to decline drastically in numbers. Peary caribou are a special member of the caribou/reindeer family and are unique to Canada, being found only on the Canadian Archipelago. The Peary caribou has shared its harsh High Arctic climes of several thousand years with only one other large land mammal, the muskoxen. No other form of caribou has successfully occupied the High Arctic Islands of Canada.

Although once common in the High Arctic, over the last 3 decades the Peary caribou has been fighting a losing battle with its surroundings.

About one half or 12,799 of the total estimated Peary caribou in the High Arctic lived on Melville Island when first surveyed by the Canadian Wildlife Service (CWS) of Environment Canada in 1961. Since that time Peary caribou on Melville and elsewhere have suffered devastating losses bringing them dangerously close to oblivion.

By summer 1973, Melville's Peary caribou had declined to 3423 or one-quarter of their 1961 estimated number. Then after a particularly cruel winter in 73-74 one-half of the caribou were wiped out. This brought their numbers down to 1,679, thirteen percent of their former stength by the summer of 1974.

The most recent effort by Environment Canada to evaluate the status of the Peary caribou on Melville Island was carried out this past summer. The results of this survey show that they have declined to an estimated 943 caribou, almost 14 times less than their 1961 number.

Environment Canada is initiating a five-year study of Peary caribou in 1988. The study will investigate how Peary caribou use their range and what they eat during late winter and spring, when their food supply is most restricted due to snow and ice conditions. It will provide insight into how Peary caribou cope in their harsh surroundings, and how they might be helped.

NATURALISTS BOOKSHELF

Bird Behaviour

Robert Burton. 1985. Granada Publishing, London. Distributed by Collins in Canada. 224 pp. Hard Cover $19.95.

In a business where paper is king, bird books are fast becoming a runnerup to those mushy romance novels. Pretty pictures of familiar birds, accompany the professional-looking yet hollow text. Those who buy them, encourage the production of second rate bird books; paper that is best left in trees. The tragedy is that there are a number of good bird books around, I suppose much like romance novels, but the problem is finding them and understanding their value.

The title of this book, Bird Behaviour, on the cover with a Great White Egret, is far from inspiring. Even worse, its format and size is all too reminiscent of bird books for the mass market trade. Frankly, for the wary, it takes a bit of courage to peek past the cover. Well, surprise! It really is true, you cannot judge a good bird book by its cover. Overall, it is damn good and worth every cent you pay. I must confess that I read it with great enthusiasm and even learned more about avian behaviour than the year spent in my 600 level course at university.

For a 200-plus page book it is relatively complete. In ten chapters it covers the Living Bird, Flight, Senses and Intelligence, Finding Food, Diet and Way of Life, Communication, Social Life, Courtship, Rearing the Young, and Mitration. Each chapter in turn, covers several major topics. For example, Chapter 8, Courtship and Mating, the topics that receive attention are: courtship rituals, the pair bond, monogamy, polygamous birds, promiscuous males, polyandry, complicated relationships, and bowerbirds and birds-of-paradise. No doubt, some familiar human traits.

The text is well written, concise and to the point. Not only are all the photographs in colour and generally of excellent reproduction, but they are also described in the text and arranged in an appealing and thoughtful manner.

The raison-d'etre of this book, so the author states, is for the growing number of people who are interested in birds but are not professional ornithologists. It is for this group of people, who number in the several millions, that the author sifted the technical journals and rewrote the highbrow jargon of the elite in a language common to us all. This book is only the tip of the fascinating world of bird behaviour. Throughout the pages and the chapters the author provides us with some of the exciting insights into the way our birds behave and also, provides the explanations for the everyday observations we see out our window. Let us face it, a simple explanation makes the feeder in front of your window not just another bird feeder but a social event, dynamic and complicated, and in every sense a structured and ritualized community, much like ours.

If there is anything bad to say about this book, outside of its mass market appeal, let it be that the author selected the birds of the world to annotate bird behaviour. Justifiably so, but it would have been much more useful to us and equally exciting, if the text included more information on our birds, those that are part of our lives. Nevertheless, it is an excellent reference and useful in one's library of pragmatic books.

G.R.A. Ebel

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ALBERTA NATURALIST

Volume 18, Number 3, Fall 1988.

Boreal Owl.

(Photo: Edgar T. Jones)

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ADVICE TO CONTRIBUTORS

Items for publication should be addressed to the Editor at the address below. Deadlines for submission of material for regular issues are: January 1, April 1. July 1, and October 1. All material submitted for publication must be typed, double-spaced, preferably on 8½"x11" paper. Maps, charts, and graphs should be submitted in "camera-ready" form if possible. Photographs accompanying an article should be submitted in the form of black and white prints on glossy paper. (Prints can be made from supplied colour slides or negatives if necessary.) Illustrative material will be returned on request. The author's name and a complete mailing address must be provided with the submission of material. Contributors should be aware that articles of a technical nature and those involving the sightings of rare species, range extensions, out of season records, etc. may be sent out for peer review. A complimentary copy of the issue in which a submission appears will be sent to authors. Information on advertising rates may be obtained from the Editor at the FAN Box No.

DEADLINES for FAN project reports are: *Alberta Christmas Bird Counts*, January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB. T2V 4H2; *May Species Count - Plants, Birds and Mammals*, July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB. T6H 3S5; Compiler cooperation is greatly appreciated.

Editor: Derek Johnson
7109 - 106 St., Edmonton, Alberta T6E 4V5
Telephone: 436-8231 home, 435-7306 work

Executive Assistant: Ann Stefura

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Alberta Christmas Bird Counts, 1987

Andrew Slater

1987 was another record-breaking year for Christmas Bird Counts in Alberta in both the number of counts reporting and the number of species found. The observer km were 13% higher than last year, and observer hours 67% higher. Due to this increased coverage and a very mild winter, the species tally rose from last year's record of 100 up to 111 this year.

Six species were new to Alberta C.B.C.'s: Black-crowned Night Heron, Orange-crowned Warbler, and Cape May Warbler in Calgary; Ring-billed Gull and California Gull in Edmonton; Herring Gull at Waterton Lakes. No species of warbler has ever been recorded before, and of the gull family, only Glaucous and Black-legged Kittiwake have lingered until the Christmas period.

The number of counts reporting was 40, nearly twice the previous best response. This was principally due to Myrna Pearman's organization of the centre of the province, which resulted in the large Red Deer count area being split into more than a dozen separate counts. The only unfortunate result of this was that Red Deer did not do well in the "greatest improvement" contest, the three most successful counts being:

	Species in 1987	Previous 5-year Average	% Improvement
Wabamun Lake	58	37.6	54.3
Claresholm	24	16.8	42.9
Horseshoe Canyon	33	24.4	35.2

Congratulations to these counts and also to Calgary that notched 69 species, a new Prairie Provinces record, and to Edmonton who enlisted 1288 participants (135 in the field and 1153 at feeders), more than double their figure for last year which was a North American record.

As well as the big numbers, many counts had highlights, enjoyable weather being one of the most widespread. Banff's best birds were two Red-winged Blackbirds, only the second time in fifteen years that this abundant summer visitor has been recorded in the province at Christmas. Bow Summit achieved their major objective in finding a White-tailed Ptarmigan, after five years of drawing a blank with this alpine specialty.

Calgary found a wealth of waterfowl species, with the Canada Goose count being most outstanding. The most amazing bird, however, was the Cape May Warbler, a fall-plumaged male, which frequented a residential backyard in the south of the city daily until February 1st, feeding on peanut butter smeared on the feeding tray.

Claresholm fielded three teams instead of the usual one and enjoyed a record year. A female House Finch was a visitor to a feeder in the town and a description was provided. There were two at the same feeder last winter, but not on count day.

Edmonton's 57 species exceeded their previous high, which was last year, by 6, but the number of Bohemian Waxwings declined from 25,000 plus last year to 604 this year, possibly due to the loss of flowers on berry trees (Mountain Ash) because of a late spring snowstorm. Edson had three Pygmy Owls "staked out" in addition to a Boreal, but only the latter responded on the night of the count. Elk Island's Long-eared Owl was another second-ever species for the province, while Fort Smith came up trumps with 17 Willow Ptarmigan, more than double the previous provincial high.

Horseshoe Canyon, in addition to their very unusual Mourning Dove and much sought-after Gyrfalcon, continued to find foothills species unexpected out on the prairies. Their 883 White-winged Crossbills was astonishing, the second highest count ever in the province. Here too, Bohemian Waxwings were reported to be extremely low.

Medicine Hat again set a new provincial Canada Goose high count and were very excited about their Varied Thrush, the only one this year. Ponoka's Common Grackle was supported by several good photographs, one of them irrefutable, making this the first properly documented Alberta C.B.C. record. Their Mountain Chickadee was another unexpected foothills wanderer. Red Deer's swan could not be identified, unfortunately. Either species is highly unusual as in fifteen years there have only been two records of Tundra and one of Trumpeter.

The Snake's Head, after shattering all previous highs last year with 34 Rough-legged Hawks, this year counted 70. One can only wonder why this species has picked the Sundre area for its annual convention! Another notable event on this count was a flock of 35 Rusty Blackbirds along a stream course, a number which is four times greater than the previous provincial high.

Wabamun Lake at last had the year they have been waiting for, with the mild winter, excellent weather and viewing conditions on count day, and a high turnout of skilled and enthusiastic counters. Their four new species were Double-crested Cormorant and Great Blue Heron (both injured), American Crow and Short-eared Owl, but their total of both waterfowl and owls would make most counters in the province sick with envy. The 58 species exceeded their previous high by 11.

Waterton Lakes, in addition to the Herring Gull, had two other gulls whose species could not be established for sure, but which might have been Californias. This count came the closest to finding Rosy Finch as 12 were seen during the count week. The Wildlife Reserve's Winter Wren was only the fourth on an Alberta C.B.C. Their other new species were Killdeer and Steller's Jay.

Steller's Jay, in fact, was found on more counts than ever before and appears to be spreading further into the province in winter. Other species which were apparently more widespread than ever before, after allowing for the increased coverage, were Canada Goose, Killdeer, American Crow and White-crowned Sparrow. Only in 1985 have White-winged Crossbills been observed in comparable numbers to this year. Species which are usually found in the province, but were not this year were Cooper's Hawk, Barred Owl, Townsend's Solitaire, Cedar Waxwing and White-throated Sparrow.

The Bohemian Waxwing total was by far the lowest in 15 years. Previous totals have ranged from 6,366 in 1984 to 29,910 in 1978 and 28,192 last year. Snow Bunting numbers were the lowest since 1980. The number of counts reporting these two species were about normal, so they were well, but thinly, distributed. The same applies to some extent to the Redpolls whose totals were the lowest since 1983 and only one third of last year's. No other species showed a significant decline.

I would again like to conclude by thanking all the count compilers, especially those who returned the Alberta Naturalist Response Form, those who provided details and photographs of unusual sightings or added interesting comments, and above all those who replied by January 31st. If everyone was able to do this, it would shorten the preparation time of this article, and hopefully the publication time, by well over a month.

Count Dates, Compilers and Participants

Banff/Canmore Dec. 19. Mike McIvor, Box 114, Banff, AB, T0L 0C0. Participants: Janet Amy, Heather Dempsey, Morag Dornian, Dave Elphinstone, Halle Flygare, Ellen Gasser, Jean Greig, Reinhold Lang, Diane McIvor, Mike McIvor, Harold Mortimer Julie Mortimer, Brian Patton, Andy Shellian, Joey Shulman, Barry Siegrist, Bob Smith, Ena Spalding, Keith Webb, Gerry Wilkie, John Woods (Bow Valley Naturalists).

Bow Summit Jan. 2. Mike McIvor, Box 114, Banff, AB, T0L 0C0. Participants: Cathy Hourigan, Lloyd Lohr, Diane McIvor, Mike McIvor, Louise Patton, Jon Whyte, Gerry Wilkie (Bow Valley Naturalists).

Brule Dec. 27. Carly Deschuymer, Julien Deschuymer, General Delivery, Brule, AB. Participants: Leya Deschuymer, Emily Deschuymer, Morgan Deschuymer.

Calgary Dec. 20. Ian R. Halladay, 2103 Crocus Road N.W., Calgary, AB, T2L 027. Participants: Ingrid Alexander, Des Allen, Bruce Anderson, Toy Baker, Frank Banack, Kathy Bangay, Reid Barclay, John Bargman, Anne-Marie Beckman, Kathie Blackman, Denise Blais, Darby Buckley-Jones, Harvey Buckmaste, Mary Clitheroe, Nancy Cook, Sheila Cox, Eileen Dann, Elizabeth Dawson-Grove, Doreen and Ted Dickson, Ross Dickson, Brian Elder, Dave Elphinstone, John Flood, Ellen Gasser, Barry and Howard Giles, Florence Godfrey, Joyce Goldsmith, Horst Grothman, Michael Hagel, Ian Halladay, Michael Harrison, Doreen Higgen, Cedric and Robin Hitchon, Andrew and Mavis Holder, Glen Hvenegaard, Jean Irwin, Bonnie and Fred Jacobs, Marieke Jalink, Don Jantzie, Kate Jones, Olga and Ben Karasek, Steve Kassai, Paul Keogn, Estelle Kessler, Bev and Ed Kissinger, Mike Klazek, Terry Korolyk, Marion and Maurice Langpap, Del Lavallee, Mac Love, Joan and Malcolm MacDonald, Carson and Mary Manzer, Doris Marshall, David Mathews, Jean McCullough, John McFaul, Blaine McGrath, Bill McKitterick, Ken McLeod, Jean Moore, Dornian Morag, Barry Murray, Lynn Newman, Hilda Obermeyer, Linda Olson, Aileen Pelzer, Heidi Plum, Jamey Podlubny, Alaric and Jim Posey, Rick Riddell, Mike Rogers, Brenda Schnell, Peter Sherrington, Gwen Simpson, Andrew Slater, John Smith, Ena Spalding, Don Stiles, Bob Storms, Ann Taylor, Denise and Richard Thomas, John Thompson, Merlin Trigg, Suzanne Visser, Grace Weber, William Wilson, Pat Wonfor, Ray Woods, Rick Young (Members and friends, Calgary Field Naturalists' Society).

Cardston Dec. 27. Shirley Sillito, Weldon Sillito.

Claresholm Dec. 27. Grace Norgard, Box 10, Claresholm, AB, T0L 0T0. Participants: Jason Atwell, Ruth Atwell, Hazel Hudson, Cara Moser, Isabel Moser, Jamie Niessen, Grace Norgard, Al Williams.

Cross Lake Dec. 26. Patricia Mackonka, Box 100, Westlock, AB, T0G 2L0. Participants: Jim Lange, Stacey Martin-Stillwell.

Black-billed Magpies scavenging carrion. (Photo: Edgar T. Jones)

Hairy Woodpecker. (Photo: Edgar T. Jones)

Drayton Valley Dec. 27. Helmut Amelang, P.O. Box 1591, Drayton Valley, AB, T0E 0M0. Participants: Hoert Boehm.

Edmonton Dec. 27. Michael S. Quinn, 4123 - 122 Street, Edmonton, AB, T6J 1Z1. Participants: David and Kim Allan, Ken Ambrock, Darcy Aquin, Sam Barry, Elisabeth Beaubien, Barb and Jim Beck, Bob Beck, Debra Belmonte, Katrina Bettcher, Garry Boos, Robin Bovey, Laurence Bowdige, Don Bradshaw, James Bruha, Jim Butler, David Chesterman, Dick and Pat Clayton, Louis Cocks, Dawne Colwell, Bob Corbett, Mr. Cottrell, David Crowston, Bruce Dancik, Wendy Davis, Peter Demulder, Jeanne Deutsch, Loney Dickson, Alison Dinwoodie, Bob Dodge, Dave Dodge, Dave Ealey, Rainer Ebel, George Elgood, Louise Elgood, Peter Farrington, Wendy Farrington, Laura Fergeson, Cam and Joy Finlay, Muriel Finlay, Rhonda Finlay, Warren Finlay, Jeff Forsythe, Jette Fowler, Rod Fowler, Doris Francis, Barb Gaul, Mr. Gellhouse, Travis Gellhouse, Joel Ghitter, Anabelle Gilpen, Allan Hacking, Ron Hammerstedt, Karen and Ken Hennessey, Alan Hingston, Otto Hohn, Geoff Holroyd, Doris and Eric Hopkins, Stan Hutchinson, Pat Ishkanion, Colleen Jeune, Elizabeth John, Blake Johnson, Derek Johnson, Greg Kaminsky, Sean Kelly, Glennis Kilbran, Sheila Kilbran, Bruce Kinder, Marlena Kortes, Doug Krystofiak, Mal Landry, Jim Lange, Colleen Larsen, Andres Legris, Elaine Letourneau, Marg Lewis, Peter Lewis, Donalda and Teg Lloyd, Fran Losie, Chel MacDonald, Nora MacKenzie, Sherry Maslyk, Donna Mason, Dara McCarthy, Gail McCarthy, Michael McCarthy, Sean McCarthy, Dave McIntosh, Liana McIntosh, Gerald McKeating, Michel Monpetit, Brian Munroe, Dave Nadeau, Doyle Nelson, Jack Park, Gordon Petit, Dave Pick, Mary Pick, Don Pluth, Frank Procter, Richard Quinlan, Dan and Marie Quinn, Mike Quinn, Bob Reckhow, Joyce Richards, Roy Richards, Brian Rottenfusser, Teresa Scholer, Alf Scott, Linda Seale, Ron Seale, Thom Shaw, Dana Shukster, Ivan Shukster, Darrell Smith, Brian Storey, Doris Stewart, Chock Tebby, Mr. and Mrs. Thomas, Karen van der Meer, Patricia Volney, Eric Wallace, Brad Wylynko, Alex Zimmerman.

Edson Dec. 27. Darren Peterson, Box 2583, Edson, AB, T0E 0P0. Participants: Brian Boyce, Sonya Boyce, Kent Delisle, Todd Mahon, Heather Marshall, J.P. Marshall, Peter Marshall, Dean Mushtuk, Gloria Musson, Darren Petersen, Ann Rugulies.

Elk Island Jan. 2. Geoff Holroyd, Canadian Wildlife Service, 4123-122 St., Edmonton, AB, T6J 1Z1. Participants: Peter Achuff, Elisabeth Beaubien, Barb and Jim Beck, James and Serry Benoit, Jim Butler, Wendy Calvert, Bob and Jan Carroll, Murray Christman, Ray Cromie, Patricia Crossley, Loney and Lynne Dickson, Dave Dodge, Colleen Dryden, Dan and

Kathy Dumaresq, Don Flack, Deidre Griffiths, Diane Hayley, Velma Heath, Karen Hennessey, Geoff Holroyd, Michael and Peggy Holroyd, Linda Jarmolicz, Doug Krystofiak, Jim Lange, Colleen and Norm Larson, Chel Macdonald, Ross MacDonald, Gerry McKeating, Michel Montpetit, John Moore, Dave Pick, Mike Quinn, Nancy Rechow, Bill Reynolds, Trevor Roper, Beth Russell, Teresa Scholar, Barb and Darrell Smith, Jim Yuill (Edmonton Natural History Club, Friends of Elk Island Society, Strathcona Natural History Group).

Erskine Dec. 27. Lloyd Lohr, Box 1414, Stettler, AB, T0C 2L0. Participants: Allan and Bertha Clarke, Dan, Dianna, Keith, Kenny and Klevin Clarke, Molly Clendon, Gladys and Wilf Hewlett, Martha and Ron Kruger, Bea and Marvin Lohr, Lloyd Lohr, Grace Neill, Helen Shinness.

Fort Smith Dec. 26. Jaques Saquet, Box 897, Fort Smith, N.T., X0E 0P0. Participants: Isabel and Don Brannigan, Ken and Mary Lynn East, Judy and Dan Frandsen, David and Jim Crowell, Bob and Alex Gainer, Janet, Cormack and Daniel Gates, Ron Graaf, Bart, Gail, Jason and Christine Hartop, Don Huisman, Don Jaque, Mike Jones, Emily and Bob Redhead, Mike Rosen, Jacques Saquet, Wayne, Susan, Duncan and Brent Starling, Ruth Van Pelt.

Hinton Dec. 27. Beth MacCallum, 110 Seabolt Drive, Hinton, AB, T0E 1B0, 865-4906. Participants: Barry Godsalve, Lorraine Keil, Gwen Kudrenecky, Max Kudrenecky, Marion MacCallum, Leslie Simmonds, Gerry Wilde, Heather Wilde.

Horseshoe Canyon Dec. 19. Robert W. Storms, #905-815 14th Avenue S.W., Calgary, AB, T2R 0N5. Participants: Stuart Alexander, Myrtle Biggs, Gary Clarke, Ross Dickson, Michael Hagel, Michael Harrison, Doreen Higgin, Michael Klazek, Jonathan Mac Farlane, Peter Mac Farlane, Ruth Mac Farlane, Blaine McGrath, Bill McKitterick, Barbara Sherrington, Peter Sherrington, Wayne Smith, Robert Storms, Merrill Wershler, Ray Wershler.

Lethbridge Dec. 26-27. Mike Vandyk, 540-20 St. S., Lethbridge, AB, T1J 3H8. Participants: Sid Berkenhagen, Anne Brown, Elizabeth Brown, Bill Brown, T. Dolman, D. Dolman, Dick Gwatlnin, Betty Haig, Alice Harper, Frank Harper, Paula Harper, Dan Hopkinson, Shelley Lim, George Luco, Betty Luco, Janet Mather, Lynn Mather, Jennifer Mather, Lois McKillop, Betty Merrick, Gordon Merrick, Michael O'Shea, Marie O'Shea, Sheila Petherbridge, Doris Rhodes, Allan Roberts, Gordon Ross, Frank Russell, Jay Vandergast, Mr. Vandergast, Jessica Wilkinson, Joyce Wilkinson, Paul Wilkinson.

Medicine Hat Dec. 20. Rob Gardner, 548-11 St. S.E., Medicine Hat, AB, T1A 1T3.

Ponoka Dec. 27. D. Murray Mackay, Box 1479, Ponoka, AB, T0C 2H0.

Red Deer Dec. 27. Myrna D. Pearman, Box 127, Sylvan Lake, AB, T0M 1Z0.

The Snake's Head Jan. 2. Doug Collister, 3426 Lane Crescent S.W., Calgary AB. Participants: Sheila Cox, Luke De Wit, Ross Dickson, Olga Droppo, Horst Grothman, Michael Hagel, Ferrel Haug, Doreen Higgin, Daryl Hutchinson, Kate Jones, Mike Klazek, Peter Lundberg, Joan McDonald, Malcolm McDonald, John McFaul, Blaine McGrath, Jamey Podlubny, Jim Posey, Peter Sherrington, Gwen Simpson, Andrew Slater, Wayne Smith, Don Stiles, Phillip Stiles, Robert Storms, John Thompson, Pat Thompson, Suzanne Visser, Cleve Wershler, Merrill Wershler, Ray Wershler, Bill Wilson, Ray Woods.

Stettler Dec. 20. Lloyd Lohr, Box 1414, Stettler, AB, T0C 2L0. Participants: John Becklund, Dorothy Brownlee, Jim Burrell, Hugh and Nora Charles, Bertha Clarke, Francis Dodds, Bernice and Lloyd Greenlee, Elmer Gross, Vel Hainsworth, Gladys and Wilf Hewlett, Art Johnson, Lawrence Kennedy, Eva Kirtley, Doug, Martha and Ron Kruger, Bea and Marvin Lohr, Lloyd Lohr, George and Grace Neill, Helen Shinness, Margaret Simon, Barbara Smith, Bertha Smith, Art Weiss, Chester and Flo Wilson, Phyl Wood.

Wabamun Lake Dec. 20. Rainer Ebel, 18624-70 Ave., Edmonton, AB, T5T 2V8, and Alan Hingston, 53, Wakefield Blvd, St. Albert, AB, T8N 3G1. Participants: David Allan, Barbara and Jim Beck, Peter Demulder, Rainer Ebel, Jim Goodwin, Alan Hingston, Derek Johnson, Roger Jones, Stefan Jungkind, Jim Lange, Colleen and Norman Larsen, Harold Pankratz, Paul Peterson, Mike Quinn, Alf Scott, Duane Sept.

Waterton Lakes Dec. 19. Mike Vandyk. Participants: Margaret Cristall, Norman Cristall, G. Dixon, Graeme Greenlee, Patricia Greenlee, T.A. Hammell, Jean Hasslam Smith, Ken Hasslam Smith, J.E. Jellicoe, Bernie Luff, Gordon Ross, Beth Russell, W.F. Smith, Al Sturko, Lily Sturko, Barb Vandyk, Mike Vandyk, Jessica Wilkinson, Joyce Wilkinson, Paul Wilkinson.

Webster Dec. 27. Brenda Gorda, Box 9 Site 7 RR#2, Sexsmith, AB, T0H 3C0.

Wembley Dec. 20. Ellen Craig, RR#1 Wembley, AB, T0H 3S0.

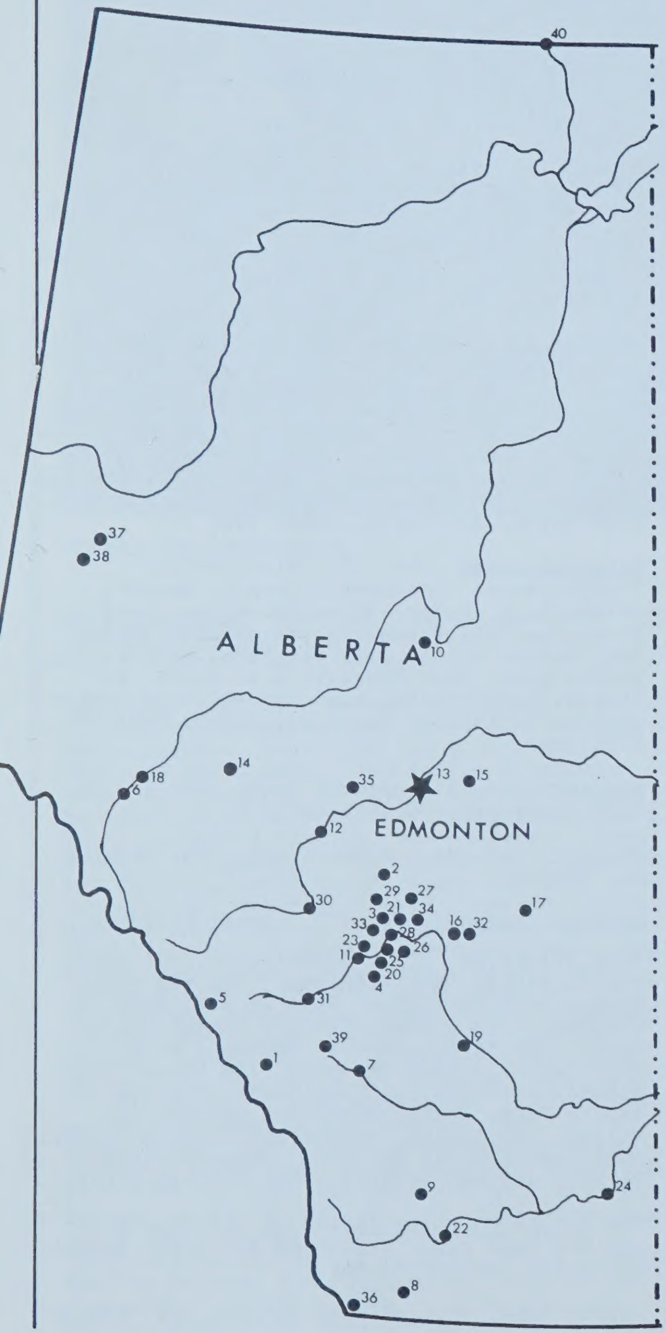
Wildlife Reserve Dec. 27. Jamey Podlubny, 4520 Bulyea Rd. N.W., Calgary, AB, T2L 2H3. Participants: Stu Alexander, Des and Liz Allen, Doug Collister, Luke de Wit, Ross Dickson, Olga Droppo, Shirley Fraser, Clay Hunt, John McFaul, Blaine McGrath, Bill McKitterick, Jamey Podlubny, Jim Posey, John Riddell, Barbara, Ian and Peter Sherrington, Daphne Smee, Wayne Smith, Don and Philip Stiles, Bob Storms, Denise and Richard Thomas, John and Patricia Thompson, Suzanne Visser, Merrill and Ray Wershler, Ray and Rob Woods.

The following participated in the counts in the Red Deer area, including Red Deer, Ponoka, and other smaller counts:

Jennie Abma, Mr. and Mrs. Ed Abt, Mrs. Adelle

Figure 1. Locations of Christmas Bird Counts in Alberta.

(See page 90 for locality names)



Abt, Marvin and Susan Albers, Wyn Alford, Jim and Robin Allen, Peggy Anderson, the Barrett family, Mrs. G. Bengston, Mr. and Mrs E. Berdine, Freda and Ray Bertram, Myron, Karin, and Adrian Bjorge, Ron Bjorge and family, Mr. and Mrs. L. Bossenberry, Amos Bryant, Vivian Busat, S. Clements, Mr. and Mrs. L. Cline, Helen Cooke, Chrissy Craig, Minnie Cunningham, Ionne Dapper, Lisha Davis, Cyril Dean, Mr. and Mrs. G. Debneys, Mr. G. DeLeeuw, Dorothy Dickson, Lorna Diggle, Jack, Joan, and Elizabeth Donald, John Drever, Mrs. Dudliman, Mrs. Duduman, Mr. and Mrs. Jim Dyck, Jan Edmonds, Mr. and Mrs. Eilenstein, Marion and Lawrence Everson, the Fate family, N. Ferlin, Morris Flewwelling, Mr. and Mrs. K. Floyd, Charles Fox, Howard Fredeen, Debbie Gillard, Margaret Glabais, Mr. and Mrs. Don Graham, Mr. and Mrs. Grigat, Jim Guilbault, Mr. and Mrs. E. Hagemann, the Hanson family, Walter Harris, Helen Harris, Lynette, Ray and Micheal Hart, Dorthy, Delaine and Geoff Hazelett, Mr. and Mrs.B. Heidt, Will, Terry, Anneke, Amanda, Willy, Doreen and Jeanie Hoogewoonink, Archie and Violet Housten, Mr. and Mrs. Humting, the Hyink family, Irene James, the James family, G. T. Johannson, Ted and Eric Johnson, Mr. and Mrs. D. Johnson, J. Kanngiesser, Carol and Grant Kelly, Michelle and Keith Kline, Mr. and Mrs. Kolke, Mr. and Mrs. L. Kramer, Mr. and Mrs. H. Lamey, the Lawrence family, Gladys and Henery Lembicz, Frank Lind, Mr. D. Littau, Mrs. L. Lyons, Mr. and Mrs. Macauley, Murray, Margaret and Heather Mackay, Germaine, Mike and Grace Maga, Mr. J. Makus, Wendy Martindale, W. Matejka, Mr. and Mrs. G. McCaughey, His Worship Mayor Bob McChee, Betty McGhee, Lynn McIntyre, Mr. and Mrs. J. McMillan, Mike McNaughton, Charles Meggison, Shirley Mirreault, Sharon Murphy, Dorothy, Sandy, Fraser and Colin Murray, Darrel and Lorraine Neal, Mr. and Mrs. Hal Nelson, Jim Newham, Tony Newman, Mr. and Mrs. Nicol, Micheal and Jennifer O'Brien, Oscar Orr, the Ostargaard family, Percy and Bessie Palmer, Myrna D. Pearman, Albert and Beth Peck, Tom and Marie Pierce, Marie Pijeau, Mary Pijeau, Jim Potter, B. Preddiger, M. and B. Pyrers, Mareen Pyresberry, Donna and Gordon Raitt, R. Raycraft, Art Reitsma and family, Jim Robertson, Mr. and Mrs. A. Roland, the Rybiak family, Mr. and Mrs. D. Schalin, Mr. and Mrs. Scott, the Shofer Family, Mr. and Mrs. Jim Smith, Harvy Smith, Dianne Stewart, Sam, Joan and Joanne Suset, Mary Taylor, the Tebb family, Mr. and Mrs. Vince Thacker, Rod Trentham, Bryon Tripp, Mr. and Mrs. R. Underwood, Marion Van Der Merwe, the Vandenberg family, Ida Vincent, Phyllis Vincent, Mr. and Mrs. R. Vold, Mr. and Mrs. Walchesky, Bill Watson and family, Irene and Karen Watson, Mr. and Mrs. B. Welsh, Cleve Wershler, Donna Westling, Mr. and Mrs. D. Wiesmeuller, Kerry, Marjorie and Rondo Wood.

Acknowledgement

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Author's Address:
152 Oakside Circle S.E., Calgary, Alberta
T2V 4H2.

Species Recorded From More Than Five Localities

SPECIES	LOCALITY AND NUMBERS SEEN
Common Loon	Waterton Lks 2
Western Grebe	Wabamun Lk. 3
D.Cr. Cormorant	Wabamun Lk. 1
Great Blue Heron	Lethbridge 1; Wabamun Lk. 1
Bl.Cr. Night Heron	Calgary 1
Swan sp.	Red Deer 1
Green Winged Teal	Banff 2; Calgary 6
Blue Winged Teal	Edmonton 1; Wabamun 1
N. Pintail	Banff 1; Calgary 6; Edmonton 23; Lethbridge 1; Wabamun Lk. 1
N. Shoveler	Calgary 1
Gadwall	Calgary 29; Medicine Hat 9; Wabamun Lk. 40
American Wigeon	Calgary 15; Edmonton 4; Medicine Hat 2; Wabamun Lk. 29
Canvasback	Edmonton 4; Wabamun Lk. 1
Redhead	Calgary 2; Lethbridge 10; Wabamun Lk. 71
Ring-necked Duck	Calgary 2; Wabamun Lk. 1
Lesser Scaup	Calgary 6; Red Deer 4; Wabamun Lk. 22
Harlequin Duck	Calgary 1; Waterton Lks. 1
Barrow's Goldeneye	Banff 2; Calgary 12
Bufflehead	Calgary 8; Edmonton 1; Wabamun Lk. 5; Waterton Lks. 5
Hooded Merganser	Calgary 2; Wabamun Lk. 9
Common Merganser	Banff 10; Calgary 90; Medicine Hat 11; Wabamun Lk. 3; Waterton Lks. 2
R-breast. Merganser	Calgary 1; Wabamun Lk. 1
Ruddy Duck	Wabamun Lk. 6
Northern Harrier	Bentley 2; Lethbridge 1; Snake's Head 2
Sharp-shinned Hawk	Edmonton 1; Red Deer 1
Red-tailed Hawk	Edmonton 2
Gyrfalcon	Edmonton 1; Horseshoe Canyon 1; Wabamun Lk. 1
Prairie Falcon	Calgary 2; Claresholm 6; Lethbridge 2; Medicine Hat 2
Spruce Grouse	Banff 1; Fort Smith 4; Wildlife Reserve 2
Willow Ptarmigan	Fort Smith 17
Wh-tailed Ptarmigan	Bow Summit 1
American Coot	Wabamun Lk. 37
Common Snipe	Banff 1; Calgary 2; Snake's Head 1
Ring-billed Gull	Edmonton 1
Herring Gull	Waterton Lks. 1
California Gull	Edmonton 3
Gull sp.	Waterton Lks. 2
Mourning Dove	Horseshoe Canyon 1; Lethbridge 2
Northern Hawk-Owl	Wabamun Lk. 3; Wildlife Reserve 1
Northern Pygmy Owl	Snake's Head 1; Wildlife Reserve 4
Great Gray Owl	Edson 1; Snake's Head 1; Wildlife Reserve 3
Long-eared Owl	Elk Island 1
Short-eared Owl	Horseshoe Canyon 2; Ponoka 2; Wabamun Lk. 1; Wildlife Res. 10
Boreal Owl	Edmonton 1; Edson 1
N. Saw-whet Owl	Edmonton 2; Elk Island 2; Ponoka 1; Wabamun Lk. 8
Belted Kingfisher	Banff 2; Calgary 2; Lethbridge 1; Medicine Hat 1; Snake's Head 1
Bl-back. Woodpecker	Edmonton 5; Red Deer 3; Wabamun Lk. 1; Wildlife Res. 2
Horned Lark	Claresholm 75; Horseshoe Canyon 44; Medicine Hat 53
Clarks Nutcracker	Banff 44; Bow Summit 4; Waterton Lks. 6
Chickadee sp.	Banff 48; Bow Summit 3
Winter Wren	Wildlife Res. 1
American Robin	Calgary 9; Edmonton 4; Medicine Hat 1; Snake's Head 1
Varied Thrush	Medicine Hat 1
Loggerhead Shrike	Edson 1; Elk Island 2
O-crowned Warbler	Calgary 1
Cape May Warbler	Calgary 1
Tree Sparrow	Calgary 1; Edmonton 10; Lethbridge 21; Medicine Hat 59
Song Sparrow	Edmonton 1
Wh-crowned Sparrow	Banff 1; Hinton 1; Snake's Head 1
R-winged Blackbird	Banff 2
Western Meadowlark	Snake's Head 4
Rusty Blackbird	Banff 2; Medicine Hat 2; Snake's Head 35
Brewer's Blackbird	Edmonton 1
Common Grackle	Calgary 1; Ponoka 1
House Finch	Claresholm 1
Finch sp.	Elk Island 2
Red Crossbill	Calgary 8; Fort Smith 1; Red Deer 2; Waterton Lks. 3; Wildlife Reserve 4
Hoary Redpoll	Edmonton 1; Lacombe 5; Wabamun Lk. 1

Evening Grosbeak.

(Photo: Gary R. Jones)

Species Recorded From Five Or Fewer Localities

LOCALITY	BANF	BATT	BENT	BOWD	BOWS	BRUL	CALG	CARD	CLAR	CROS	DICK	DRAY	EDMO	EDSO	ELKI	ERSK	FTSM	GALA	HINT	HORS	INNI	LACO	LETH	MARK
Canada Goose							1406		3														2229	
Mallard	583						16896				2200		2559							1			777	
Common Goldeneye	238						942					16	45										111	
Bald Eagle	2						3		2				1						1				5	
Northern Goshawk							2			2			1		2		2			1		1		
Rough-legged Hawk							1		11					3	1					2				
Golden Eagle			1				1		2											3			2	
Merlin			2				11		2				25							1		1	3	
Gray Partridge							229		105				156		23					41		13	76	
Ring-necked Pheasant			1				21	2	33				28		2					7			3	3
Ruffed Grouse	1	1	11				5			11			21	10	16	2	1							8
Sharp-tailed Grouse							8	12					3							1				
Killdeer	1						18																1	
Rock Dove			71				2335	12	304		18		4543	69	168	19			3	108		81	233	5
Great Horned Owl	1	1	1				8		1	1			21	1	7	2	2			9		3	8	
Snowy Owl			3				4	1	4				4		1							3	3	
Downy Woodpecker	16	4	15	2		1	77		6	1		2	112	9	47	4	8	2	2	15	3	12	11	
Hairy Woodpecker	18	4	11	2		1	19		2	4		1	74	7	29	2	7	3	2	2	1	8	9	
Three-toed Woodpecker	7				1		2						1		3		1							
Common Flicker	3						13						6									1	12	
Pileated Woodpecker	1	1	4				1					1	9		6		2					1		
Gray Jay	45				11	3	3			6		9	2	64			36		22					
Steller's Jay	7																		1					
Blue Jay		6	13	4			43			4		12	921	16	100	4		4	2	14	2	15	1	2
Black-billed Magpie	142	2	63				737	62	173	5	15	5	3042	32	261	92		2	24	234	7	47	164	9
American Crow	5		1			3	5					3	3		1							2	3	
Common Raven	230				4		69		31	6		4	1	189	1		375		111					
Black-capped Chickadee	156	30	143	4		4	626	7	21	7	18	32	3424	39	975	45	21	6	25	308	20	71	88	10
Mountain Chickadee	125						19		4				1							3				
Boreal Chickadee	76	2	5	2	8		101			1			59	14	40		59		2	3		4		3
Red-breasted Nuthatch	24					1	50		1				26	1	1				1	229			4	
White-breasted Nuthatch	4		6	1			37					2	117	5	29	2						6	4	
Brown Creeper	13						17						7		7					12				
American Dipper	29				3		2																	
Golden Crowned Kinglet	7						31						24		3					113			3	
Bohemian Waxwing	230		1			6	924	10					604							1			114	
Northern Shrike							1		3				4		5					1			1	
European Starling	14						633	33	18				614	82						4		1	93	
Dark-eyed Junco	3		8				11						38				3			1				9
Snow Bunting	80	1					1				12		7	353	250	50			6	45				
Pine Grosbeak	83				1		91						38	12	22	3	85		56	14		2		
White-winged Crossbill							230			30										883				
Common Redpoll	3		189				268	36				120	61		22		53			321		75	3	12
Pine Siskin							30						17	2	5				1					
Evening Grosbeak	188	12	79	20			44		1				110	24	15	20	32		35			84	10	
House Sparrow	209		114			21	1649	177	833				9860	420	335	266		60	96	1004	32	504	378	65
Total Species	43	11	22	7	8	8	69	10	24	12	5	11	57	23	33	13	18	7	18	33	6	21	36	10
Total Individuals	2661	64	744	35	36	40	27833	352	1642	78	2263	207	26654	1355	2384	511	709	77	391	3429	65	940	4388	126
Total Observers	21	2	26	2	7	5	100	2	8	3	2	2	1288	11	78	17	29	1	9	19	2	19	33	4

Species Recorded From More Than Five Localities

	MEDI	PENH	PINE	POND	REDD	RIMB	ROCK	SNAK	STET	SYLV	TEES	WABA	WATE	WEBS	WEMB	WILD	Total
Canada Goose	2322											6	126				6092
Mallard	701				208			4				3033	1				26962
Common Goldeneye	171				4							397	11				1935
Bald Eagle	6				1			3				1	4				29
Northern Goshawk	1							3	2			1	1		1	1	21
Rough-legged Hawk	3			1				70		2		5			1	28	128
Golden Eagle	1												1				11
Merlin	2			1	2			2								1	53
Gray Partridge	124			10	15				13			8			20	11	844
Ring-necked Pheasant	48			20	1							2			2		173
Ruffed Grouse				9	7		2	24	1		1	10	1	3	10	47	202
Sharp-tailed Grouse	43														1		68
Killdeer	1				2			5				2	1			1	32
Rock Dove	1039	9	6	330	387	48		63	327	24		31			140	86	10459
Great Horned Owl	6			5				1	2			9			2	4	95
Snowy Owl				5				1	1	4		2			1		37
Downy Woodpecker	20	2	3	34	53	1	3	21	11	2	2	25	3	1	4	15	549
Hairy Woodpecker	1			14	17			12	9		1	23	4	2	4	21	314
Three-toed Woodpecker								4					2			12	33
Common Flicker	12				2												49
Pileated Woodpecker				3	3			7				3				5	47
Gray Jay					1			52				48	3	2	4	177	488
Steller's Jay					1			1					10			1	21
Blue Jay		1	1	90	104		3	31	27		7	107		7	9	45	1595
Black-billed Magpie	526	8	9	180	308	8	1	144	129	17	9	243	35		70	217	7022
American Crow	1				1			1				2					31
Common Raven			1	2	3			301			1	28	18		30	249	1654
Black-capped Chickadee	96	8	78	469	786	15	14	442	79	13	43	623	45	10	50	433	9284
Mountain Chickadee				2				6					31			25	217
Boreal Chickadee				16	107		15	243				59	2			186	1007
Red-breasted Nuthatch	57				49			3				6	14			6	473
White-breasted Nuthatch	1		1	9	29			10		1	1	25	1			8	299
Brown Creeper					2			7					1			5	71
American Dipper								1					8			6	49
Golden Crowned Kinglet	3							27				3	11			9	234
Bohemian Waxwing	139			52	301			12				42					2436
Northern Shrike				1	1			8	1	1		2			2	4	35
European Starling	390			22	4			29	2			20				1	1960
Dark-eyed Junco	16				3								3				95
Snow Bunting	59							86					92			455	1497
Pine Grosbeak	2			8	30			15				25	24			6	517
White-winged Crossbill	2				102			42				26				56	1371
Common Redpoll	12			74	119			265				298	43		80	176	2230
Pine Siskin				8	3							8	14				88
Evening Grosbeak	2		20	266	163			80		16	6	96	15	17	10	15	1380
House Sparrow	2086	24	139	858	473	127		486	405	11	8	259			15	291	21205
Total Species	42	6	9	29	39	5	6	46	14	10	10	58	36	7	20	41	111
Total Individuals	8034	52	258	2493	3303	199	38	2559	1009	91	79	5725	547	42	456	2630	104499
Total Observers	38	4	7	92	88	2	3	41	32	8	4	18	20	1	1	35	2084

Legend:

BANF -Banff
BATT -Battle Creek
BENT -Bentley
BOWD -Bowden
BOWS -Bow Summit
BRUL -Brule
CALG -Calgary
CARD -Cardston
CLAR -Claresholm
CROS -Cross Lk.
DICK -Dickson Dam
DRAY -Drayton Valley
EDMO -Edmonton
EDSO -Edson
ELKI -Elk Island
ERSK -Erskine
FTSM -Fort Smith
GALA -Galahad
HINT -Hinton
HORS -Horseshoe Canyon
INNI -Innisfail
LACO -Lacombe
LETH -Lethbridge
MARK -Markerville
MEDI -Medicine Hat
PENH -Penhold
PINE -Pine Lk.
POND -Ponoka
REDD -Red Deer
RIMB -Rimbey
ROCK -Rocky Mtn. Hse.
SNAK -Snake's Head
STET -Stettler
SYLV -Sylvan Lk.
TEES -Tees/Clive
WABA -Wabamun Lk.
WATE -Waterton Lks.
WEBS -Webster
WEMB -Wembley
WILD -Wildlife Reserve

Christmas Count Coverage and Weather Conditions

Locality	Km by vehicle	Km on foot or skis	Hours by vehicle	Hours by foot or skis	Hours watching feeders/ owling	Temp.max. deg. C	Temp.min. deg. C	Windspeed kmh max.	kmh min.	Snow depth in cm max.	min.
1 Banff	203	98.5	10.50	58.50	26.00	-4	-10	19	2	20	10
2 Battle Ck.	6	1.5	1.00	0.50	0.00	8	-6	0	0	5	0
3 Bentley	130	8.0	5.00	6.00	14.00	8	-6	0	0	5	0
4 Bowden	0	0.0	0.00	0.00	8.00	8	-6	0	0	5	0
5 Bow Summit	119	35.0	3.00	15.50	0.00	-12	-22	8	0	70	60
6 Brule	20	0.0	4.00	0.00	4.00	-2	-8	0	0	0	0
7 Calgary	707	213.0	39.00	126.00	220.00	2	-4	29	11	0	0
8 Cardston	68	5.0	3.00	4.00	0.00	5	0	5	0	0	0
9 Claresholm	240	10.0	8.00	3.00	1.00	8	-4	20	0	2	0
10 Cross Lk.	170	5.5	5.00	3.50	0.00	6	-3	20	0	3	1
11 Dickson Dam	40	8.0	1.00	1.00	0.00	8	-6	0	0	5	0
12 Drayton Valley	180	2.0	6.00	1.00	1.00	3	-5	0	0	0	0
13 Edmonton	997	616.0	134.00	471.00	1339.00	3	-1	8	0	5	1
14 Edson	500	40.0	12.00	7.00	5.00	5	-4	0	0		
15 Elk Isl.	899	239.0	41.00	117.00	21.00	-7	-14	30	20	15	10
16 Erskine	267	12.0	14.00	4.00	0.00	-2	-6	5	0	5	0
40 Ft.Smith	90	56.5	5.00	29.75	1.00	-8	-14	6	0	22	15
17 Galahad	0	0.0	0.00	0.00	2.00	8	-6	0	0	5	0
18 Hinton	209	7.2	10.00	4.00	21.00	-2	-8	0	0	0	0
19 Horseshoe Can.	737	96.0	28.25	51.75	0.00	1	-7	29	0	1	0
20 Innisfail	0	3.0	0.00	4.00	5.00	8	-6	0	0	5	0
21 Lacombe	29	17.0	2.00	7.00	9.00	8	-6	0	0	5	0
22 Lethbridge	134	71.0	17.00	45.00	0.00	4	-5	0	0	0	0
23 Markerville	0	14.0	0.00	7.00	0.00	8	-6	0	0	5	0
24 Medicine Hat	411	95.0	22.50	47.00	14.00	1	-4	25	0	2	0
25 Penhold	60	6.0	2.00	1.00	3.50	8	-6	0	0	5	0
26 Pine Lk.	0	6.0	0.00	3.00	1.50	8	-6	0	0	5	0
27 Ponoka	262	79.0	12.00	26.00	177.00	5	-7	0	0	1	0
28 Red Deer	69	111.0	6.00	57.00	63.00	8	-6	0	0	5	0
29 Rimbey	0	8.0	0.00	2.00	0.00	8	-6	0	0	5	0
30 Rky. Mtn. Hse.	0	1.5	0.00	1.50	1.00	8	-6	0	0	5	0
31 Snake's Head	1438	165.5	66.00	77.00	13.75	-10	-12	32	8	5	0
32 Stettler	355	8.0	16.00	3.75	10.00	-3	-5	3	0	5	0
33 Sylvan Lk.	45	10.0	1.50	3.50	5.00	8	-6	0	0	5	0
34 Tees/Clive	27	7.0	2.50	4.00	5.00	8	-6	0	0	5	0
35 Wabamun Lk.	626	61.0	38.00	29.50	16.00	2	-7	8	0	8	0
36 Waterton Lks.	108	41.0	14.00	24.00	14.00	0	-5	30	8	10	0
37 Webster	0	0.0	0.00	0.00	4.00	-1	-8	9	0	5	0
38 Wembley	87	0.0	2.00	0.00	2.00	-5	-7	15	2	0	0
39 Wildlife Res.	1001	175.0	51.00	89.00	10.00	7	-4	16	0	5	0
Total	10234	2332.2	582.25	1334.75	2016.75						
Average	256	58.3	14.56	33.37	50.42	3	-7	8	1	7	2

Nose Hill. (Photo: J.D. Johnson)

A Study of Three Disturbed Areas on Nose Hill, An Urban Natural Area Park

Patricia Stansfield

Nose Hill is an example of an urban natural area within the city limits of Calgary. There is still a raging political controversy, which has become provincial, as to whether the Nose Hill Park should be extended or not, and how it should be managed. However, even if it does not fall into the hands of the land developers, large parts of the original short grasslands have already been exploited by man. The plateau area has been used for agriculture, and its summit and slopes have large scars, the result of quarrying for sand and stones.

In this paper, a study carried out in 1987 of three disturbed sites will be analyzed and the concept of extending a Natural Area to include an SSSI (Site for Special Scientific Investigation) will be introduced.

My intention was to follow the succession of plants over time on each of the three sites and notice when, if ever, they returned to the climax grassland ecosystem. This study was carried out on the three disturbed areas that are marked on the map as A, B and C. The mono- and dicotyledons were listed each week, except the Gramineae and tree species. A and B represent shallow gravel pits that were exploited and left bare more than twenty years ago. At that time the top and subsoil of Site A had been removed and dumped on the plateau, forming a small, artificial hill. Early in 1987, this soil was replaced on Site A. But gravel pit B was not covered; a beacon sits on the topsoil that was removed from it.

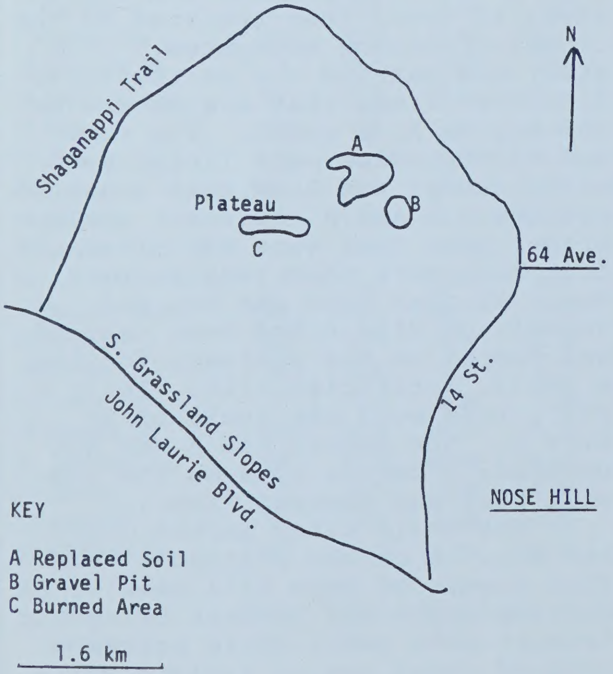
The third site, marked C on the map, is on the plateau. The flat summit of Nose Hill used to be cultivated, a hay harvest being cut from it each year. This practice stopped about ten or fifteen years ago, and in February 1987 an area of about 50 ha was burned, and 20 ha of this area was studied.

Table 1 gives a complete list of all the flowering plants that were found on each site during the spring and summer of 1987. The list is divided into five separate parts in which species found in all the sites are listed together; on two sites only; or those species that were found only on sites A or B or C.

An analysis of Table 1 shows that there were fewer species in Site B than in either A or C (22 species compared to 33 and 37 respectively). However, a comparison of the total number of species found in each site is not relevant because the area of each is different. Site A is the largest (42 ha), followed by C (20 ha), and B, the quarry, is only 8 ha. However, an analysis of the different families and species found in each area is revealing.

In Site A, where the top and subsoils had been replaced, 18 species that were not found in the other two sites were noted. The barren, bare soil was deposited on this site in spring, and as nothing had been planted on it, I watched the growth of seedlings, wondering which plants would invade the area first. Without exception, the plants that were found to flourish in this site only were "weed" species, that is to say plants commonly found on disturbed areas such as the Chenopodiums and thistles. As the season advanced and the seedlings took root, sprouted and flowered, I made some notes. On April 13, I noted: "bare, dry, packed soil. Not a blade of grass or plant anywhere." By May 5 a few seedlings were observed, and two months later I noted: "Still very bare but the general aspect shows small clumps of green everywhere. Stinkweed predominates." On June 26: "Individual plants are large and robust and scattered sparsely all over the soil, except for large clumps of Stinkweed and thistles." A month later I noted: "Things look greener because the plants are taller and bushier. The dominants are Stinkweed, thistles and Tansy Mustard." By the beginning of August and throughout September the greatest number of species were in flower, and the Chenopodiums had become another dominant invader. On September 10, I noted: "The dominant plants are still Stinkweed, thistles, three species of Mustard and four species of Chenopodium. In one area there is a garden of thistles so thick it is impossible to walk through them." During the whole season the Gramineae were conspicuous by their absence. By the end of September the Chenopods were drying into large, ugly tumbleweeds. By February, the western winds had blown many of these weeds into the eastern ravines of Nose Hill.

Map of Study Area



It is also interesting to note that species in Site A tended to bloom later than the same species in Sites B or C. *Cirsium vulgare*,

Above: Sticky Purple Geranium (Geranium viscosissimum). Below left: Woolly Gromwell (Lithospermum ruderale). Below right: Cut-leaved Anemone (Anemone multifida). (Photos: J.D. Johnson)

TABLE 1. SPECIES COUNT IN THREE DISTURBED SITES DURING 1987.

	Species	Area
A = Replaced top and subsoil	33	42 ha
B = Quarry	22	8 ha
C = Burned Site on the Plateau	37	20 ha

FAMILY	SPECIES	APR	MAY	JUNE	JULY	AUG	SEPT
I. Species found in all three sites.							
Ranunculaceae	Anemone multifida		BC	A C			
Cruciferae	Erysimum cheiranthoides		B	BC	A C	A	A
Leguminosae	Thermopsis rhombifolia		ABC	A			
Compositae	Achillea millefolium			BC	ABC	ABC	A C
"	Artemisia frigida				ABC	AB	C
"	Artemisia ludoviciana				A C	A C	BC
"	Aster ericoides				BC	ABC	A C
"	Aster laevis				BC	BC	ABC
"	Cirsium arvense				ABC	ABC	ABC
"	Gaillardia aristata			B	BC	BC	ABC
"	Heterotheca villosa				BC	BC	AB
"	Solidago missouriensis			B	ABC	A C	
II. Species found in two sites only.							
Chenopodiaceae	Chenopodium album				A	A C	A
Rosaceae	Rosa woodsii				C	A	
Leguminosae	Melilotus alba			B	AB	AB	B
Onagraceae	Epilobium angustifolium			BC	BC	BC	
Compositae	Solidago gigantea			BC	BC	BC	
III. Species found in Site A only.							
Chenopodiaceae	Chenopodium album				A	A	A
"	Chenopodium sp.					A	A
"	Chenopodium rubrum				A	A	A
Ranunculaceae	Clematis tangutica				A		
Cruciferae	Descurainia sophia			A	A	A	A
"	Erucastrum gallicum				A	A	A
"	Sisymbrium altissimum			A	A	A	A
"	Thlaspi arvense			A	A	A	A
Boraginaceae	Lappula squarrosa				A	A	A
Solanaceae	Solanum triflorum				A	A	A
"	Solanum nigrum						A
Compositae	Artemisia biennis					A	A
"	Artemisia ludoviciana						A
"	Artemisia sp.						A
"	Cirsium arvense					A	
"	Cirsium vulgare						A
"	Solidago nemoralis						A
"	Sonchus arvensis					A	A
IV. Species found in Site B only.							
Liliaceae	Smilacina stellata		B				
Boraginaceae	Lithospermum incisum		B				
Scrophulariaceae	Linaria vulgaris			B	B		
Compositae	Carduus nutans			B	B	B	B
"	Gutierrezia sarothrae						B
"	Melilotus officinalis					B	B
"	Senecio canus			B			
V. Species found in Site C only.							
Ranunculaceae	Anemone patens	C					
"	Ranunculus acris		C				
Cruciferae	Arabis hirsuta		C				
"	Cerastium arvense		C				
Rosaceae	Geum aleppicum				C		
"	Geum triflorum		C				
"	Potentilla arguta			C	C		
"	Rosa arkansana				C		
Leguminosae	Astragalus drummondii		C				
"	Astragalus pectinatus			C			
"	Hedysarum alpinum			C			
Geraniaceae	Geranium viscosissimum			C	C		
Violaceae	Viola adunca		C				
Onagraceae	Gaura coccinea				C		
Gentianaceae	Gentianella amarella					C	
Boraginaceae	Lithospermum ruderale		C				
Scrophulariaceae	Castilleja miniata			C	C		
"	Orthocarpus luteus					C	
Rubiaceae	Galium boreale			C	C		
Caprifoliaceae	Symphoricarpos occidentalis					C	C
Compositae	Antennaria parvifolia		C	C			

the Bull Thistle, was not seen in flower until September 17 and it remained in flower well into October. They were magnificent plants that grew robustly and were almost 1.6 m tall. Solidago nemoralis, a Goldenrod, did not start flowering until September 4 and it was still blooming when the first snows fell in October.

In Site B, the quarry, the species that were found in this area only were more varied and represented a more general range of flowering plants. There were also a few clumps of Gramineae. However, none of these plants were found in large numbers, and often they were only present in ones or twos. The general aspect was still that of a gravel pit with a few brave plants growing between the stones here and there. Dominant plants throughout the season were Thermopsis rhombifolia (Golden Bean), Solidago missouriensis (Missouri Goldenrod), and Melilotus alba (White Sweet Clover).

As would be expected, by far the largest number of species that were not "weeds" was found in the burned area. Burning the grasses did not harm them because their roots were not destroyed. In fact the burn may have been beneficial for the invasion of some species such as Astragalus drummondii (Drummond Milk Vetch) and the only Chenopodium, Chenopodium album (Lamb's Quarters), that was found outside the replaced topsoil area. I noted how the grasses recuperated during the season: "April 6. A few tufts of grasses are starting to get green, but the soil is very bare and rust-coloured mosses predominate." "April 20. The area is grey-green with sprouting Gramineae. The unburned grassland is still dull brown." After another month I wrote: "The site looks dark green, but the grass covers the soil sparsely." From June to August the grass still remained sparse so that the flowering plants were easily seen. It was not until September 10 that

Northern Bedstraw (Galium boreale).
(Photo: J.D. Johnson)

I noted: "It is not too easy to distinguish this area from the surrounding grassland now."

Conclusions

This study of disturbed sites within a Natural Area Urban Park demonstrates the possibility of extending the Natural Area concept to a Site for Special Scientific Investigation. An analysis of the results brings up a series of questions that can only be answered by extending the study over a number of years, or even decades. Firstly, one wonders why the topsoil was not replaced immediately after the quarry had been abandoned. If this had been done, there would probably be more likelihood of viable natural grassland seeds within the soil that would have germinated. It is notable that no Gramineae sprouted so that the area remained bare of grasses.

Another question is the advisability of mixing top and subsoils when replacing the earth that had been removed from the quarry. Nose Hill has a well-defined topsoil about 15 cm deep, and a subsoil metres in depth in most locations. The comparatively small volume of topsoil is presumably mixed and buried amongst the infertile subsoil layers. This would aid the growth of weeds such as the Chenopods and thistles.

There are innumerable other questions: for instance, where do the invading species come from? Are the seeds dormant within the soil, or are they wind-blown from other areas? Will the vigorously growing weeds, especially the Chenopodiums, invade the already established grasslands? Will grassland species, especially the Gramineae invade the bare soil next year or will the Chenopods and Mustards continue to dominate the area, and if so, for how long? How long will it take for this site to reach the climax grassland ecosystem, if it ever will do so?

I have been watching the invasion of plants on the quarry Site B over a period of six years. During this time there has been a definite increase of both species and the number of plants within each species. However, the site still remains very bare. A question to ask is: Will this area, in which the topsoil has not been replaced, ever return to a climax grassland ecosystem?

Lack of time prevented me from comparing the burned area C with an adjacent area of unburned grassland of the same size, which would make an interesting study. An investigation could be made to demonstrate whether burned areas allowed an increase in the number of species that could invade the site. There is some difficulty here, because the poor growth of the Gramineae allowed immediate observation of the flowering plants, which are often easily hidden in thick grassland. A better comparative study should start the second and following years after a burn, and the Gramineae should be included.

Nose Hill presents a wonderful opportunity for scientific investigation in the field. It is important to know the length of time a disturbed area takes to evolve to the climax grassland ecosystem by which it is surrounded. Artificially seeding replaced topsoil may not be the answer to reclaiming disturbed sites. It should be noted that undisturbed grasslands change naturally over time, and the factors which cause these changes make for another area of fascinating study. In this way Urban Natural Areas could become Special Sites for Scientific Investigations. Such sites are known internationally as SSSI. Any such studies should be made periodically and over a long period of time. They could be carried out by the University or by well informed amateurs, such as members of the Field Naturalists' Society.

Author's Address:
608 - 63 Ave. N.W., Calgary, Alberta
T2K 5L3.

The Greater Edmonton Owl Prowl

Barb and Jim Beck

(The full report of the owl prowl appears in the fall issue of The Edmonton Naturalist. What follows is a condensed version of that report.)

Barred Owl.
(Photo: Edgar T. Jones)

Edmonton established an owl count this year to increase our knowledge and awareness of these nocturnal predators. The first ever Greater Edmonton Owl Prowl was held in an 80 km radius circle centered at 109 Street and the middle of the North Saskatchewan River. Participants armed with tapes, maps and data sheets ventured out into the 23 count zones to find owls. In addition to information on the number and species which occur in the circle, information about techniques for finding the owls and observations about their behavior and habitat were recorded.

The owl prowl turned out to be much more successful than anticipated. Between February 20 and March 22, the 78 participants who made up 31 parties sighted or heard 265 great horned owls, 140 saw-whet owls, 86 snowy owls, 30 short-eared owls, 3 barred owls, 2 long-eared owls, and 2 boreal owls for a total of 528 owls and 7 species. (The actual number of snowy owls recorded in the count may be as low as 62 owls and the number of short-eared owls as low as 26 because some duplicate sightings were probably involved.) Parties of observers spent 291 hours driving and walking during the daytime to find owls and 130 hours listening and calling for the owls at night. Many interesting observations were reported.

The snowy and short-eared owls were seen during daylight trips. The other species were mainly identified by their calls at night. In most cases tape recorded calls were used to elicit responses.

Great Horned Owl: Our provincial bird was the most common owl observed in the count. Of the 265 great horned owls found, 30 were first identified by sight, 23 by spontaneous calling and 155 by their response to taped calls. (It was not clear from the reports how the remaining 57 were first detected.) Great horned owls appear to respond not only to great horned owl calls but also to the calls of other species, particularly that of the great grey owl. During February and early March both the male and female great horned owl would readily approach the caller when the taped call of the great horned owl was played, however, during the last half of March often the female was only enticed to call when the call of the great grey owl was played.

Snowy Owl: Eighty-six snowy owls were reported during the owl prowl. The exact number seen is difficult to determine because during the latter part of the count the owls were migrating. These owls were seen during the day and most appeared in open farmland.

Short-eared Owl: Like the snowy owls these owls are usually observed during daylight hours sitting in fields with grass or stubble. Probably due to the mild winter and lack of snow this year several short-eared owls wintered in the count circle.

Barred Owl: Three barred owls were observed during the owl prowl. In two of the three cases the owl approached the caller but made no sound. Barred owls have been reported to respond well to taped calls during the day and at night, however, they respond much better during the nesting season (T. Bosakowski 1987; T. Bosakowski, R. Speiser, and J. Benzinger 1987) which occurred after the conclusion of the count.

Boreal Owl: Only two boreal owls were reported in the owl prowl. Both of the owls responded to taped owl calls, but apparently not to that of the boreal owl.

Saw-whet Owl: This owl was also found to be prevalent in the

Short-eared Owl. (Photo: Edgar T. Jones)

greater Edmonton area. They seem to prefer sites with at least a little conifer present. Of the 140 saw-whet owls located 26 were calling spontaneously and only one was first identified by sight. Most of the saw-whet owls were detected by their responses to the taped calls which appears to be an efficient way to find these owls (S. R. Swengel and A. B. Swengel 1987).

Though some saw-whet owls responded to the taped saw-whet calls, others seemed to respond to the calls of other owl species, often the call of the boreal owl. Although one would think that the call of the great horned owl would deter the saw-whet, we observed that this was not usually the case. The saw-whet owls often started calling after the call of the great horned owl had been played and on several occasions a saw-whet owl was observed to start calling from the bottom of a tree which contained a great horned owl calling in its top. Even though playing the call of the great horned owl before those of the smaller owls does not appear to inhibit the response of saw-whet owls, it might inhibit that of other species. It is probably best to call the owls by playing the calls of the smaller owls first (D. G. Smith and T. Carpenter 1987).

Saw-whet owls are rarely reported in the Edmonton area during the winter. This is probably due to their small size and their tendency to hide during the day. Furthermore, they do not appear to respond to calls when the temperature falls much below -10 degrees. These owls have been reported to respond to taped calls, however, they do not always respond with the winnowing call we were using on the tapes and frequently approach the caller without making a sound (M. W. O'Connell 1987). Because most of the prowlers are not familiar with these other vocalizations and much of the calling was on nights when there was little or no moon, many of these owls may have been missed.

Long-eared Owl: Both of the long-eared owls reported during the owl prowl responded to a taped call. To elicit responses we used the meow-like call and in both cases the owl responded with hoots. It was only because the observers were familiar with other vocalizations that these owls were identified. Next year we need to obtain more of the calls of this owl to help observers in identification. Furthermore, the taped calls used may not be those which best elicit responses. The low numbers reported for this owl may be due to our search technique or may be due to the fact that they have not yet returned from winter areas.

Search Techniques: Several techniques were used to find owls in the owl prowl. The snowy owls and the short-eared owls were seen during daylight hours. A few great horned owls and one saw-whet owl were seen during daylight hours but most were identified by their calls. During a few nights some of the great horned and saw-whet owls were calling spontaneously, however, most of the responses from these owls were elicited by the taped calls. The long-eared owl, barred owl, boreal owl and great grey owl may respond well to our taped owl calls but the number observed is too low to draw any conclusions. The taped calls may even be frightening these owls or we may not have the proper call on the tape to elicit a response. Furthermore, some owls may be responding with vocalizations which are not familiar to the prowlers.

Small tape recorders do not reproduce the calls with enough fidelity and volume to attract the owls. The party identifying the largest number of owls (getting more than 140 owls to respond to taped calls) was using a Sony CFS 5000S Stereo-recorder "ghetto blaster." They spent between 20 and 30 minutes at each site playing calls and listening for responses. At times it took more than 20 minutes to get an owl to respond. They usually played much of the tape twice. Because the calls of the larger owls may frighten the smaller owls, each time the tape was played they usually played the calls of the smaller owls first, leaving the call of the great horned owl for last.

A few other conditions affected the observers ability to find owls. Wind greatly hinders the search for owls. Owls do not appear to call spontaneously and do not appear to respond to taped calls in even a moderate wind. Responses to the taped calls were good for the saw-whet owls as long as the temperature was at or above -11 degrees, even during the winter months when the owls do not spontaneously call. The great horned owls responded at temperatures as low as -25 degrees. It is very difficult to use the recorded calls in areas that are developed into acreages because there tends to be many dogs. Dogs and coyotes bark and howl at the calls making it difficult to hear the owls. A bright moon appears to encourage the owls to call spontaneously but did not appear to affect responses to the taped calls. The night on whch a party recorded the best success (30 owls in 8 sites) was moonless. Without a moon, however, owls which approach without making a sound are more likely to be missed.

Even though the use of taped calls is a good way to find some owls, the calling must be done with care. Several possible negative effects of the use of taped calls have been reported (D. G. Smith and T. Carpenter 1987). Sometimes an owl will continue to call for some time after the tape is played, possibly making it more susceptible to predators. Frequent disturbance could reduce the owls normal activities of courtship and frequent and persistent playing of taped calls might frighten owls from their territories or cause them to alter territorial boundaries. To minimize these problems the owl prowls should be held early in the year and sites not repeatedly called.

Next Year: We hope to extend the owl prowl to the entire province by combining it with the Alberta Bird Atlas Project. If you did not participate this year and wish to participate next year please send your name, telephone number, address and postal code to Barbara Beck, 10947 - 36 Ave., Edmonton, Alberta T6J 0B9, phone 435-2065, or contact your regional coordinator for the Alberta Bird Atlas Project.

Acknowledgements

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Authors' Address:
10947 - 36 Avenue, Edmonton, Alberta T6J 0B9.

Mountain Bluebirds Show Fidelity to Nesting Boxes and Maintenance of Pair Bonding

W. Hoffmann and H. Pletz

In the spring of 1986 Hardy Pletz banded young bluebirds in a nestbox southeast of Edmonton. He also captured and banded the adult female and later the adult male of this nestbox.

In 1987 an English Sparrow had taken over this particular nestbox. One adult bluebird (unbanded) had been killed in a fight with the sparrow over occupancy of the nestbox. The sparrow was subsequently destroyed.

On May 18, 1988 Hardy found bluebirds were again present at this box. Eggs were found inside. He caught the adult female after he saw that she was carrying a band. She was the same bird he had banded at this nestbox in 1986. The male was also seen to be carrying a band on May 31st. Immediately Hardy wondered if it might be the same male as well. He built a makeshift remote release trap with which he was able to capture the male on June 6, 1988. It was indeed the same male he had banded at this very site two years earlier. This demonstrates pair bonding at least since 1986 and remarkable fidelity to a nestbox territory.

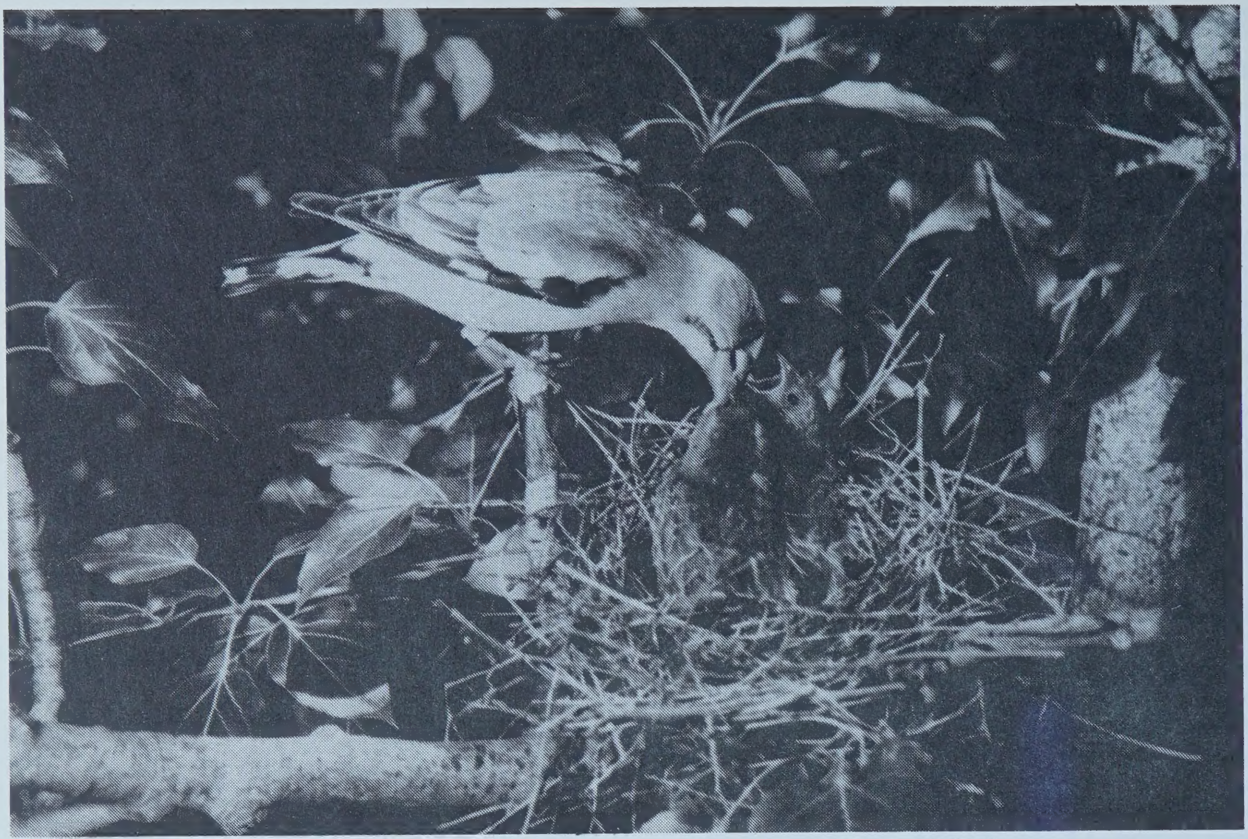
Authors' Address:
133 Kaskitayo Court, Edmonton, Alberta T6J 3T3.

Male Mountain Bluebird.
(Photo: Hardy Pletz)

1988 Nest Record for an Evening Grosbeak near Elk Island Park

W. Hoffmann and H. Pletz

Nesting of Evening Grosbeaks in the Edmonton area in the vicinity of their winter feeders has been suspected for some time, but never confirmed with the discovery of an active nest. Despite their apparent abundance at winter feeders and their occasional presence at other times of the year, nest records for this species in Alberta are rare. A nesting record for Evening Grosbeaks was written up in Bob Lister's bird column in the Edmonton Journal (June 20, 1981).



Female Evening Grosbeak feeding young Brown-headed Cowbirds.

(Photo: Hardy Pletz)

On June 14, 1981 Ray Cromie discovered two nests near Skeleton Lake (Boyle area). Tent caterpillars had denuded the forest canopy, leaving the nests visible. They were both situated high in a poplar, against the trunk, and held in place by small secondary branches. One female grosbeak was observed feeding young at the nest while the other was sighted at the nest. Neither nest was climbed to.

The appearance of newly-fledged grosbeaks at feeders in the Edmonton area indicates that breeding is occurring nearby. In 1988 Nick Dobish decided that he would continue providing sunflower seeds at his bird feeder throughout the summer. In previous years, he, like most people, cut off the food supply after the winter. On May 15, 1988, Nick's wife Ann discovered a nest high in a balsam poplar just a short distance from their feeder.

The nest was 13 m up and 0.2 m from the thinning crown trunk (10 cm diameter). It was supported by a secondary fork of thin branches. A loosely-stacked structure of fine sticks, the nest was somewhat reminiscent but more substantial than a typical Rose-breasted Grosbeak nest. Fine rootlets were woven in to line the cup. Although the nest did not seem too well attached to the branch, it withstood strong gusting winds.

On May 18th Nick Dobish observed the adult female Evening Grosbeak fly to the nest. Her approach was not direct. At this point he knew that he had an Evening Grosbeak nest under observation. After May 20th the male grosbeak was noticeably absent from the territory, or he may have been present but was not detected. Toward the end of incubation the female timed her trips to the feeder at approximately 2 1/2 hour intervals. The male was not seen to supply her with food during this time.

We first visited the site on June 7th. Two young, estimated to be approximately 6 days old at the time, were in the nest. The nestlings' eyes were open and pinfeathers were just beginning to show. Hatching would have been June 1st or 2nd. The male grosbeak was sighted in the vicinity of the nest when it was checked (a sturdier nearby tree was climbed and the nest tree pulled over to examine the nest). The female, which had been brooding, remained close by, flitting from tree to tree and calling in an agitated manner. After his initial appearance, the male withdrew.

On June 11th the nest was photographed with the aid of construction scaffolding provided by Pat Smith. It was then that it was discovered that the two young in the nest were cowbirds and not grosbeaks. Ed Jones, who also photographed the nest site, confirmed this.

Location -- west of Elk Island Park, 0.8 km north of the Strathcona Wilderness Centre, between Range Road 211 and 212, and 0.8 km north of Township Road 530.

Authors' Address:
133 Kaskitayo Court, Edmonton, Alberta
T6J 3T3.

Alberta Seasons

M. T. Myres

Alberta winters
Can begin in September
With a foot of snow,
And hold on 'till late April
With chilling north winds.

To the horizon
A blue sky and wind-carved snows,
Long Canadian sleep.

First symptom of change,
Soft chirpings of house sparrows
On a winter day.

****

Alberta in spring.
White swans rest on ice-bound lakes,
Impatient migrants.

Early bird migrants,
Because of late spring snowstorms,
Gain nothing at all !

Cheated of real spring --
Winter-embattled summer.
Leaves burst in four days.

****

Uncertain summers,
Prairies either parched, or soaked.
Jet stream determined ?

For fresh peace of mind,
Whilst others assault mountains,
I seek open space.

Waving seas of gold,
Heat haze and grasshopper songs,
Meadowlark prairies.

Black-bellied plover,
June north-bound, July returned;
Short arctic summer.

****

Golden harvest lands --
White man's paint on native hills,
Winter's stubble face.

****

Author's Address:
2332 Sunset Avenue S.W., Calgary, Alberta
T3C 2M8.

Editor's Note:
Five of these haiku first appeared, in two separate groups, in *Calgary Field Naturalist* Volume 5 in 1973/74.

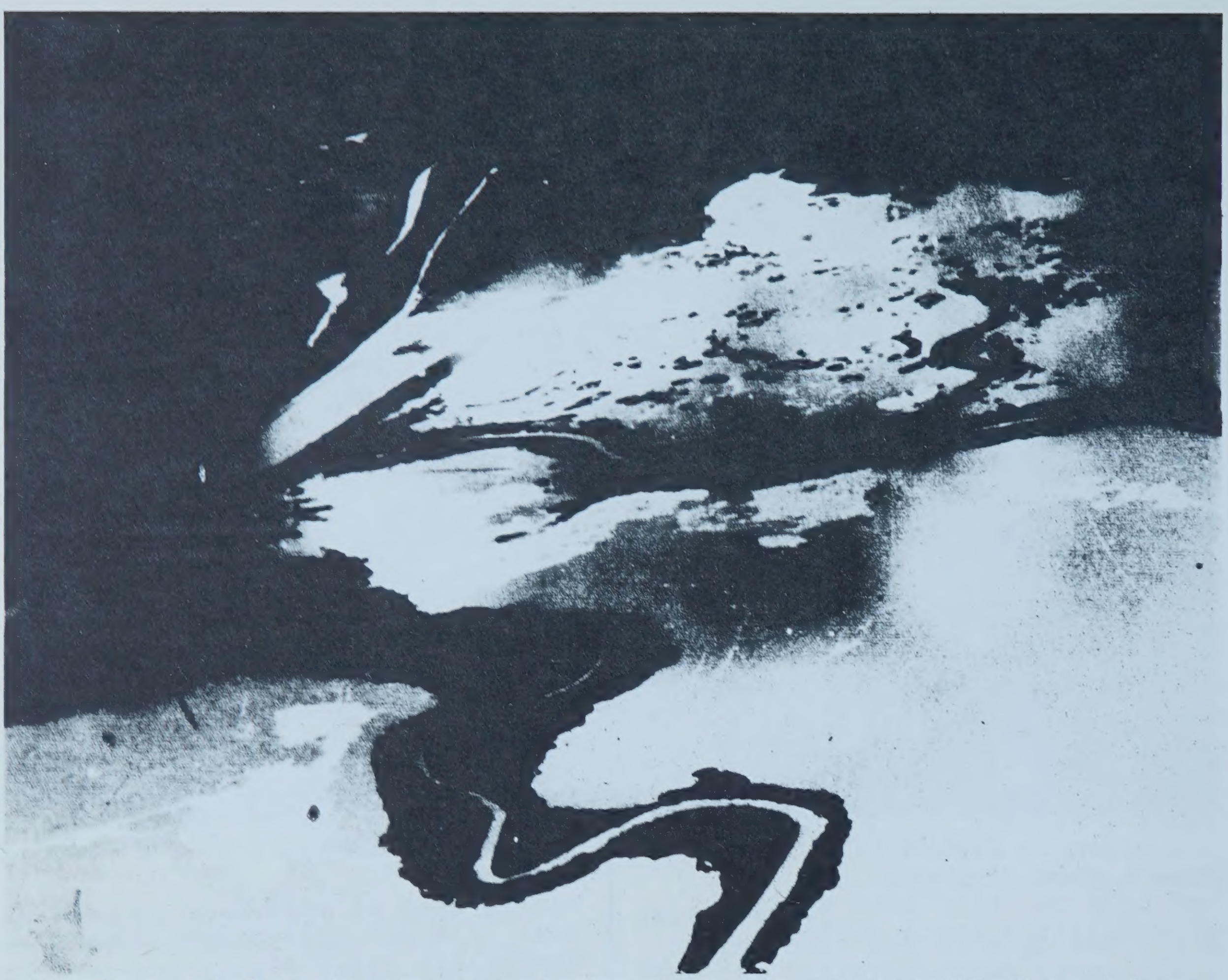


Figure 1. Aerial photo of the Sweetgrass-American Point region of Wood Buffalo National Park. The dark shades represent areas of brush and the white areas floodplain grasses covered with snow. During sunny March days bison tend to congregate in the open areas where they crater the snow feeding on the underlying sedges. (Photo: Bob Gainer)

Bison, Banff National Park. (Photo: G.L. Holroyd)

Aerial Surveys of Bison in the Peace-Athabasca Delta

Bob Gainer

Burnham *et al*.'s (1980) technique for the line transect estimation of population density has many advantages. Foremost amongst these is that it does not assume every surveyed object in the transect will be located. It is actually based on what is overlooked at distances away from the transect relative to what is not overlooked right on the transect. Another advantage is that equipment costs are minimal. Probably the single most important disadvantage is that it has received only theoretical consideration. Very little field work has been done to determine the actual mathematical models so that the calculations can be reduced to a simple formula that field workers can employ.

During the winter, bison of Wood Buffalo National Park concentrate in the *Carex* and *Calamagrostis* floodplains in the Peace-Athabasca delta (Fig. 1). On sunny March days large numbers of these animals can be seen in the open savannahs in the Sweetgrass-American Point region, the contrast of their dark bodies with the white snow providing ideal material for aerial surveys. As a biometrical exercise for the Renewable Resources Technology Program at Fort Smith, the bison were surveyed to determine a mathematical model useful for population estimates.

The surveys were flown on clear days in March 330 m above the ground in a high wing aircraft. Ten distance categories, in 400 m intervals, were marked on the struts. Information collected was the number of animals in a group (larger groups were counted in groups of 10) and the distance category at which the group was perpendicular to the transect. Distance estimations were found to be quite accurate as the imprecision associated with wing and heading movements was without bias.

The distribution of 306 sightings from six years of surveys is given in Fig. 2. There was no appreciable difference between the left and right sides so they were combined to increase the sample size. The results most closely approximated the half normal distribution (as sketched in Fig. 2),

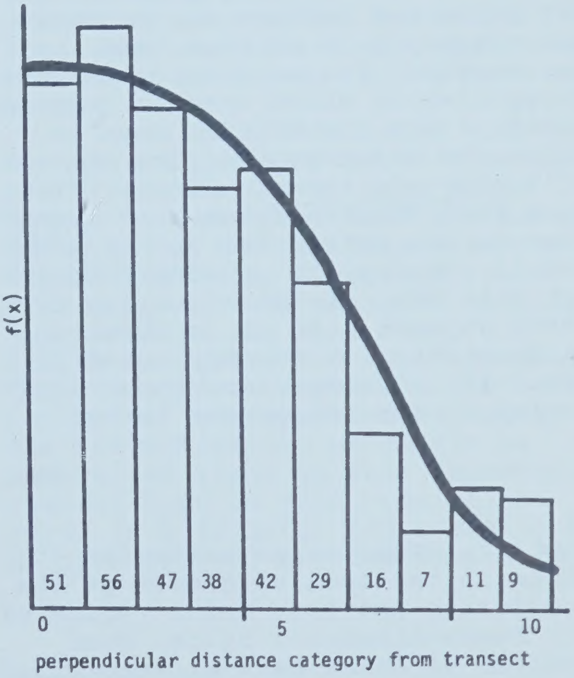


Figure 2. The probability f(x) of observing a bison group at categories of perpendicular distances from the transect during aerial surveys of the open savannahs in the Sweetgrass-American Point region of Wood Buffalo National Park each March, 1983-1988. Numbers on the bars indicate the number of sightings in each distance category.

for which the estimation of population number ($\hat{N}$) is $\hat{N} = \frac{An}{\pi \bar{x} L}$, where A is the population area, n the number of animals seen, L the transect length, and $\bar{x}$ the average sighting distance (Hemingway 1973).

Population estimates were made for the six years 1983-88 (Table 1). Although they closely approximated the impression of total numbers in the area gained during the surveys, they were considerably less than estimates made by the Park, especially during the latter years. The Park estimates include those animals not in the delta at the time and those not in the open during the midday surveys.

What this exercise suggests is that an estimate can be made of bison in the open delta savannahs using line transects and a simple formula. The exercise also demonstrated the relative importance of the pilot and copilot as observers and unimportance of rear seat passengers. The most important categories in which animals must be observed are the initial ones in which the pilot and copilot make virtually all the sightings. The rear seat observers can make sightings in the categories to the side, but in reality the pilot and copilot make most of the sightings there as well. As it is important that animals not be overlooked in the initial categories (those overlooked in the categories to the side are reflected in the average sighting distance and the normal distribution of the sighting distances), the front seat as a sighting platform cannot be overemphasized. Pilots and copilots participating in such surveys must be both motivated and knowledgeable of the work.

Table 1. Population estimates for bison in the open savannahs of the Sweetgrass-American Point region of the Peace-Athabasca delta, Wood Buffalo National Park as determined by aerial surveys.

1983	3,258
1984	3,034
1985	2,183
1986	1,639
1987	987
1988	1,224

Acknowledgement

I would like to thank Don Langille for his support during the project.

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Author's Address:
Box 1313, Fort Smith, N.W.T. XOE OPO.

Water Hemlock Poisoning of Cattle and Bison

Bob Gainer

In 1982 I was asked to investigate a Water Hemlock poisoning of a cattle herd near Fort Vermilion. A cow-calf herd of 26 lost 8 adults. Two animals were autopsied and after exhaustive sifting of the rumen contents, 1 bulb was recovered from one of the animals and three from the other. None of the bulbs had been macerated, just hardly more than broken open. Four of the animals were found within 10 m of where we saw evidence of bulbs being extracted from the ground, the most distant corpse was 50 m. Suspected plants were collected from the area and submitted to Mike Rudakewich, Alberta Agriculture Fairview Division, who had them identified as Cicuta mackenzieana.

The pasture in which the animals were kept was a fenced off area of native Aspen parkland with several low-lying sloughs and oxbows of the nearby Peace River. Water supplies were natural; shallow, seasonally abundant and seasonally deficient. The poisonings occurred later in August when the high-ground grasses that the cattle normally prefer beneath the trees, such as the Agropyron spp. (Wheatgrasses), had been heavily grazed and stem cured. It may have been the animals were attracted to the greener, lusher grasses in the lower, damper areas, or even seeking out drinking water.

The native slough hay, primarily Carex atherodes (Awned Sedge), that grows in abundance in the lowlands in this area has long been harvested for hay by the locals. Members of the Roman Catholic Mission remember that these sedge meadows could only be used for hay. Because of the presence of poisonous plants that cattle would find in areas not hayed, cattle could not be allowed to pasture in the locale. The unfortunate fellow who recently fenced a portion of this area and used it for pasture found this out afterwards.

Reynolds (1987) found that by far the most important component of bison diets in nearby Wood Buffalo National Park and the Slave River Lowlands was Carex atherodes, the slough hay or sedges that made the area in which the Water Hemlock poisonings I examined so attractive for hay meadows. Despite the fact that bison frequented the area in which the cattle had died and several similar areas nearby, and that Water Hemlock is probably as abundantly associated with the Park sedges as in the Fort Vermilion area, bison have never been described or suspected of dying from Water Hemlock. This implies an inherent difference between the two species.

Fowler (1981) outlines the mechanisms by which wild herbivores cope with injurious plants that invariably are a component of their environment. Because of the extreme toxicity of Water Hemlock, such mechanisms as dilution, detoxification and degradation are probably not as important as avoidance. Genetic behavior is probably the basis of the avoidance rather than learned behavior or experience, again because of the extreme toxicity of this plant.

In the Fort Vermilion area, the Water Hemlock was fairly widespread but in patches associated with, yet separate from, the meadows of sedges harvested for slough hay. The sedges were in more seasonally inundated floodplains. The Water Hemlock was found along some of the edges that tended to be moist throughout the summer and fall. These patches were always shaded by surrounding trees and the substrate was an organic, sphagnum moss base that even in the fall was damp.

Reynolds (1987) noted that bison actually demonstrated a marked preference for Carex atherodes. Cattle on the other hand are known to be quite indiscriminate feeders, even by domestic livestock standards. I've heard managers of grazing reserves say that sheep and horses may graze the tops off Water Hemlock without ingesting the bulbs and dying, the opposite of cattle. The susceptibility of cattle as opposed to bison in this important habitat type in this area of the world is a dramatic illustration to me of a natural genetic adaptation.

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Author's Address:
Box 1313, Fort Smith, N.W.T. XOE OPO.

F.A.N. NEWS

Ellis Bird Farm Limited

I have served one year as the F.A.N. representative on the Ellis Bird Farm Limited Board of Directors. I am pleased to report that the birds are nesting again and the business of the Board is progressing well as noted in the following summary.

1987 BREEDING SEASON

In 1987 Mountain Bluebirds were first seen near the Ellis farm on March 18th. During the nesting season that followed a total of 91 nests were attempted, by 76 pairs of Bluebirds, in the 541 boxes monitored by the trail operator Myrna Pearman. Sixty-nine broods were successful. A total of 414 eggs were laid, 322 young were hatched, and 284 fledged. Ninety-nine percent of these nestlings were banded.

Thirty-four previously banded adult Bluebirds (21 females and 13 males) returned to the study area in 1987. Two of these did not appear to occupy nestboxes within this area.

House Sparrows attempted to occupy 164 boxes in the study area during the nesting season. This number was exceptionally high and trail operators have observed that sparrows are seeking boxes farther and farther from building sites. The 100 experimental boxes introduced into the trail several years ago were especially attractive to House Sparrows. These have been replaced with more conventional nest boxes for the 1988 breeding season.

Tree swallows arrived in the study area on April 28th. They utilized 186 of the trail's 541 nest boxes.

The spring and summer weather was generally amenable for all bird species during the critical breeding season. A mild fall may have delayed migration, as two Bluebirds were sighted in the Joffre area on December 10th.

BIRD FARM PROJECTS

In the spring of 1987 Ellis Bird Farm Ltd. invited project proposals from eighteen oranizations and seven individuals. The following is a brief summary of the projects selected from the many proposals submitted.

1. Nest Box Program. This is an outreach program developed to increase awareness, among rural Alberta school students, of the need for habitat conservation. The focus of the program is cavity nesting birds and the importance of well maintained nest box trails. Developed and delivered by the Bird Farm biologist, Myrna Pearman, this two hour free program was presented in 31 schools in 1987. Thirty different schools will be visited in 1988.

2. Huber Type Box Traps. Since no low cost devices for live-trapping sparrows in nest boxes were available commercially, Bird Farm supported the production of a quantity of Huber type traps. These are manufactured by Marie Pijeau and sold through Ellis Bird Farm Ltd. on a cost-recovery basis. Traps can be ordered for $5.00 each and will be shipped post-paid.

3. North American Blue Bird Society Research. A donation was made to N.A.B.S. to help support their excellent research grant program.

4. Interpretation Brochures. Three brochures on birds of Waskasoo Park are being prepared for distribution through the Kerry Wood Nature Centre. This project is being co-funded by the Kerry Wood Nature Centre Association and Ellis Bird Farm Limited.

5. Winter Bird Feeding Guide. This project involves the preparation of a comprehensive guide to feeding birds that winter in central Alberta. The guide will be prepared by Myrna Pearman and the copyright held by Ellis Bird Farm.

6. Flicker and Chickadee Nest Box Experiment. Some assistance was provided to Dale Hjertaas and the Saskatchewan Natural History Society to develop a nest box (possibly chip filled) that is more attractive to flickers and chickadees.

The following is a summary of the status of 1987 projects that had not been completed.

1. Resource Kit. This project involves production and distribution of a resource kit designed specifically for use by elementary school teachers. Each kit contains a Student Workbook, Teacher's Resource Manual, a video program entitled "Helping Cavity Nesting Birds," and several other resource materials. Kits will be distributed, at no charge, to regional libraries, nature centres and learning resource centres in Alberta. It is almost ready for distribution.

2. History of The Ellis Bird Farm. Prepared by Anna Robertson, this history includes accounts of the Ellis' involvement with cavity nesting birds, the purchase of their land by Union Carbide, the co-oper-ation between the Red Deer River Naturalists and Union Carbide in establishing Ellis Bird Farm Ltd. and aspects of Bird Farm's opera-tion. This history is now complete and available through Bird Farm.

3. Burrowing Owl. Bird Farm has funding in place and a man-made "burrow" prepared to reintroduce Burrowing Owls in central Alberta. The plan is to obtain owls with nestlings hatched at the Calgary Zoo and relocate them in a protected area on the Ellis farm. It appears that, for the second year now, there will not be any suitable owls available.

N.A.B.S. CONFERENCE

I was privileged to attend the North American Blue Bird Society Conference held in Chevy Chase, Maryland in September, 1987. Ken Larson represented the Board at the 1988 conference held in Montreal in June.

NEWSLETTER

An Ellis Bird Farm Newsletter will be printed and distributed 3 to 4 times per year. Bird Farm produced newsletters in the past but these were associated with a particular project and called "Project Nestbox Alberta," which made them more restricted than the new publication.

PRIORITIES FOR 1989

In the coming year Bird Farm intends to focus on analysis of data already collected, design of future research, and revision of previous publications. Few new project proposals will be considered.

Eldon Neufeld

Alberta Bird Atlas Day

They sit, silent, listening and watching. Around them, the forest or the lake's edge, a mountain side or the open prairie. Hunters? Soldiers? They are birders and their numbers grow every year. Bird-watching is a contemplative and passive sport, yet birders can become passionate, even fanatical, over the discovery of a rare species, the location of a nesting area, or just the spring arrival of the first member of a species. It is this enthusiasm that is being tapped by the Federation of Alberta Naturalists (F.A.N.) to produce the Alberta Bird Atlas.

Using a new word in the process, F.A.N. will need the services of over 2000 volunteer 'atlassers' to document the nesting and breeding habits of roughly 250 bird species in Alberta. Projected to cost $535,000, with nearly double the values in donated services and technical assistance, the result in 1992 will be an attractive and essential reference work.

Testifying to the project's importance are the many federal and provincial agencies acting as advisers and providing technical support, publicity, and other services.

Patron to the project, the Honourable Dr. J.W. Grant MacEwan, and Executive Director Jack Clements are receiving support from Alberta Forestry, Lands and Wildlife, Environment Canada, Recreation, Parks and Wildlife Foundation, the Provincial Museum of Alberta, the Canadian Wildlife Service, and other associations, foundations and corporations. Since the atlas project began in 1987, two important grants of $42,000 each have been received from the Recreation, Parks and Wildlife Foundation to provide important start-up and operating funds. F.A.N. is seeking additional funding from a variety of other sources.

The Honourable LeRoy Fjordbotten, Minister of Forestry, Lands and Wildlife, announced June 25 as Alberta Bird Atlas Day. He is well aware of the need for this reference work, which will provide baseline data for use in management of Alberta's birds, increase knowledge of breeding, distribution and concentration of species, and provide a recreational guide as well as a valuable manual for naturalists.

Mr. Fjordbotten said: "Knowledge of the status of birds in Alberta is unevenly distributed, and is limited mainly to settled regions and sporadic reports. Bird species and populations of many remote parts of the province have never been properly catalogued."

Further support for the hobby of bird watching is planned by Alberta Forestry, Lands and Wildlife. The department intends to develop interpretational facilities at sites with high wildlife populations. "We still have to consider such aspects as timing and funding, but we hope to make an announcement later in the year" said Mr. Fjordbotten.

The designated day, to be repeated until 1992, provides a rallying point for atlassers across the province. As well, the timing of the day is uniquely appropriate because the end of June is an excellent period to document nesting and breeding.

The logistical difficulties of organizing 2000 volunteers have proven to be challenging. The province has been divided into 10 regions, each named after its principal city or town. The largest of these are the least settled, and local, provincial and international experts are encouraged to catalogue the very remote areas. Atlassers receive a kit that includes a handbook, report forms, land entry approval forms (because a great number of species nest in settled and privately owned areas) and identification cards.

On June 25, coordinators and atlassers in the various regions atlassed the birds at their favourite haunts. Other atlassers 'square-bashed' which created yet another new word in the process. 'Square-bashers' are atlassers who work in teams on a square area of landscape to gather breeding evidence of birds. This is usually done over a 24 hour period.

The information collected will be funnelled into computer systems provided by Forestry, Lands and Wildlife. A committee comprising technical staff from the Provincial Museum, Alberta Fish and Wildlife, The Canadian Wildlife Service, and the Alberta Ornithological Records Committee is providing technical advice to marshall the data into usable form.

Created as a response to Wildlife '87, last year's salute to 100 years of wildlife reserves, the enterprise has already garnered tremendous support from interested birders, wildlife associations and clubs, and corporate sponsors across the province, as well as corporations, foundations and individuals outside of Alberta. Rare species have been sighted and recorded in many areas, and, as one participant commented, "we are only one year into this project and there is already a lot to crow about."

If you wish to become an atlasser, receive the newsletter, or just find out more, please contact: Executive Director, Jack Clements, Alberta Bird Atlas Project, Provincial Museum of Alberta, 12856 - 102 Avenue, Edmonton, Alberta T5N 0M6.

You may also phone, using the RITE system, (403) 427-1730.

Alberta Bird Atlas Project—Omission

Acknowledgement of the Recreation, Parks and Wildlife Foundation was inadvertently omitted from the Acknowledgements section of the report in the Spring 1988 issue (Vol. 18 No. 1 page 29).

The RPW Foundation is a key supporter of the Alberta Bird Atlas Project and contributed two cheques for $42,000.00 to F.A.N. for this Project: the first in 1987, and the second this year. This support was crucial in 1987 by providing the time necessary to develop the management and administrative framework and to develop a well prepared fund raising campaign.

The objectives of the RPW Foundation are to provide grants to any person or organization for projects which will develop or maintain recreational programs, facilities and services; develop or maintain parks; or manage and conserve fish and wildlife. Applications for project grants are open to individuals, organizations, educational institutions and municipalities.

The Foundation's support is greatly appreciated.

Jack Clements

FAN-sponsored Hikes

The Federation wants all participants on its hikes to know what conditions to expect. To ensure this, advertisements will list the leader's name and phone number, as well as the total distance to be covered. Further details can be obtained from the leader. Those with children may especially want to enquire about conditions.

All participants will be required to sign a waiver before starting the trip. This will list possible hazards as anticipated by the leader.

We hope this will give you a better idea of what the outing involves.

Rob Gardner, President

CLUB NEWS

Lethbridge Naturalists' Society

October 16 will be the annual general meeting with election of officers for the coming year, and members' night, where members show their own slides.

The program for the November 18 meeting has not yet been finalized.

The program for December will consist of the Lethbridge and Waterton annual Christmas Bird Counts.

Regular indoor meetings are held on the second Friday of the month, from October through April, 7:30 p.m., room 1028, Cousins Building, Lethbridge Community College, 3000-College Drive South, Lethbridge, Alberta.

Graeme Greenlee

Letter to the Editor

Comment on WOLFFIA ARRHIZA AND W. COLUMBIANA (LEMNACEAE) IN ALBERTA, published in Alberta Naturalist by G.C.D. Griffiths.

The water is described as "clean and calcareous." Although it is "clean" relatively speaking, because of the low electrical conductivity (less than 250 uS/cm), no values for carbonates and especially bicarbonates have been given. The accuracy of values for Ca, Mg, Na, and K can only be assessed in the presence of all values for the anions, HCO3, CO3, SO4, and Cl. (Values for SO4 and Cl, only, have been given.)

It appears that the water is unusually high in bicarbonates. Generally, the Electrical Conductivity: Total Cations ratio is around 100. However, the ratio may be as low as 80 in bicarbonate waters that are high in Ca and Mg and may be as high as 110 where Cl is the predominant anion. The analysis of this water indicates a ratio of 71.7. Neither Ca nor Mg is particularly high in this sample. (The North Saskatchewan River, for example, has Ca = 43 ppm and Mg = 12 ppm.) The lack of an analysis for bicarbonate precludes proper characterization of the water.

Moving from chemistry to plant ecology, I note that, previously, both *W. arrhiza* and *W. columbiana* have been found in waters with high N. Is this organic N or inorganic N or both? I strongly suspect that, organic N, at least, is present, if abundant plant life is being supported. However, if one were to assume that both plant species can exist in the absence of N in the water, it would be in the author's interest to show the special characteristics of this water.

Finally, before concluding that this is, in fact, a new type of habitat for these plants, I think the chemical analysis should be more comprehensive. For example, a "Total Dissolved Solids" analysis definitely should be done.

I.K. Edwards

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Recent Publications on Alberta Natural History

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Young Porcupine. (Photo: Jim R. Salt)

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Editor: Derek Johnson
7109 - 106 St., Edmonton, Alberta T6E 4V5
Telephone: 436-8231 home, 435-7306 work

Executive Assistant: Ann Stefura

Layout: Dick Dekker

Printing: Percy Page Centre

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The Sculpins of Alberta

Wayne Roberts

Abstract

Sculpin species and their distributions within Alberta are discussed. Diagnostic characters are provided for identification of all sculpin species known to occur in Alberta. The life history of the Spoonhead Sculpin (Cottus ricei) in east slope streams is described. The Shorthead Sculpin (C. confusus) is identified from the St. Mary and Milk rivers of Alberta. This report is the first for this threatened species from east of the continental divide where they represent the only plains populations of this species in Canada.

Introduction

The sculpin family (Cottidae) is a group of about 300 mostly marine fishes distributed largely in north temperate waters (Nelson 1976). Cottus is a large circumpolar freshwater genus represented by three species in Alberta. At least one species is known to occur in each of Alberta's major drainage systems (Figure 1). Despite their wide distribution, sculpins frequently go unnoticed owing to their cryptic behaviour and small size.

The Spoonhead Sculpin is found in the montane, foothills and plains portions of the major east slope streams of Alberta (University of Alberta Museum of Zoology (UAMZ) collections). Only a single young of the year specimen is known from the Milk River (UAMZ collection). This individual was probably displaced via the diversion canal in Montana from the upper St. Mary River where this species is more abundant. Spoonhead Sculpins are not usually found in lakes within Alberta, however, they have been recorded in Rock and Lesser Slave lakes and in reservoirs such as Abraham and Gleniffer. Additional locality records from streams and lakes are to be expected in the Peace and Athabasca drainages. Life history data for this species in Alberta's east slope streams are provided below.

The Slimy Sculpin (C. cognatus) is known from creeks, rivers and lakes within the Peace and Athabasca drainages and from Cold Lake within the Beaver River drainage (Paetz and Nelson 1970; UAMZ collections). Reports of this species from the Red Deer River by McCart and Jones (1975) were probably based on misidentified Spoonhead Sculpins (M. Jones pers. comm.). Records of the Slimy Sculpin from Sylvan Lake are believed to be in error (Paetz and Nelson 1970) and no specimens are known from this locality. Specimens from the Milk River identified by Wells (1977) as the Slimy Sculpin were re-examined and shown to be Shorthead Sculpin. As with the Spoonhead Sculpin, additional locality records within the Peace and Athabasca drainages are to be expected.

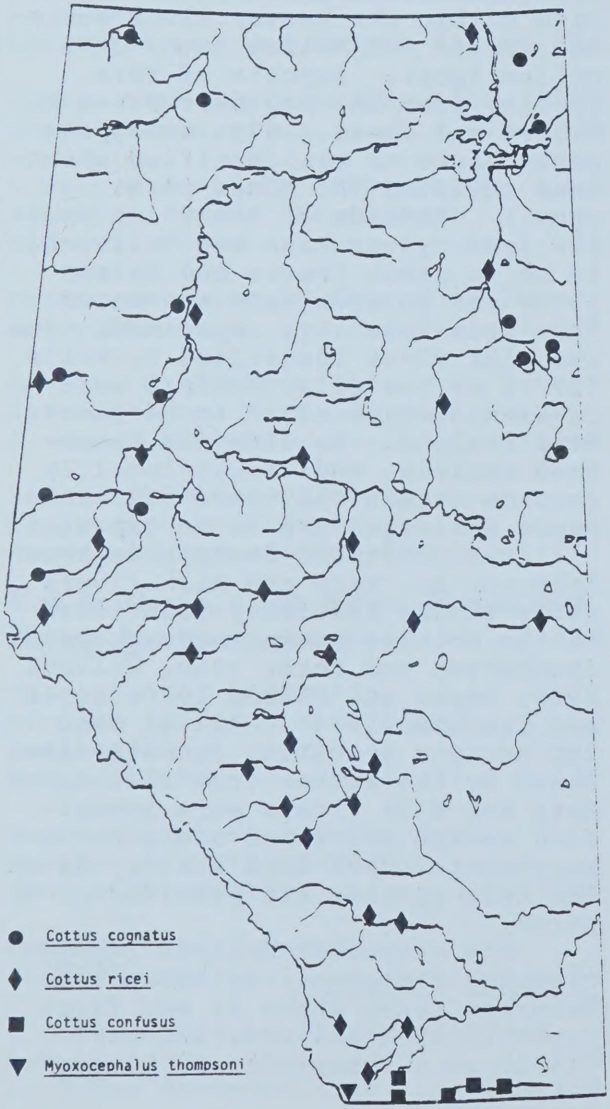
The Shorthead Sculpin is known from the St. Mary and Milk rivers where it was initially identified as the Mottled Sculpin (C. bairdi) (Henderson and Peter 1969; Willock 1969; Paetz and Nelson 1970; Scott and Crossman 1973). All of over 150 sculpin specimens recently examined by the author from the St. Mary and Milk rivers were identified as the Shorthead Sculpin. Morphometric and life history data for this species are provided below.

The Deepwater Sculpin (Myoxocephalus thompsoni) is known from Waterton Lakes where it was first reported by McAllister and Ward (1972) as a subspecies of M. quadricornis.

Identification

It is evident that even trained biologists and ichthyologists have trouble identifying sculpins. However, given the small number of species present in Alberta and a knowledge of diagnostic features, accompanied by an understanding of problems associated with their use, the sculpins of Alberta may be identified with confidence.

Figure 1. Localities for sculpins in Alberta

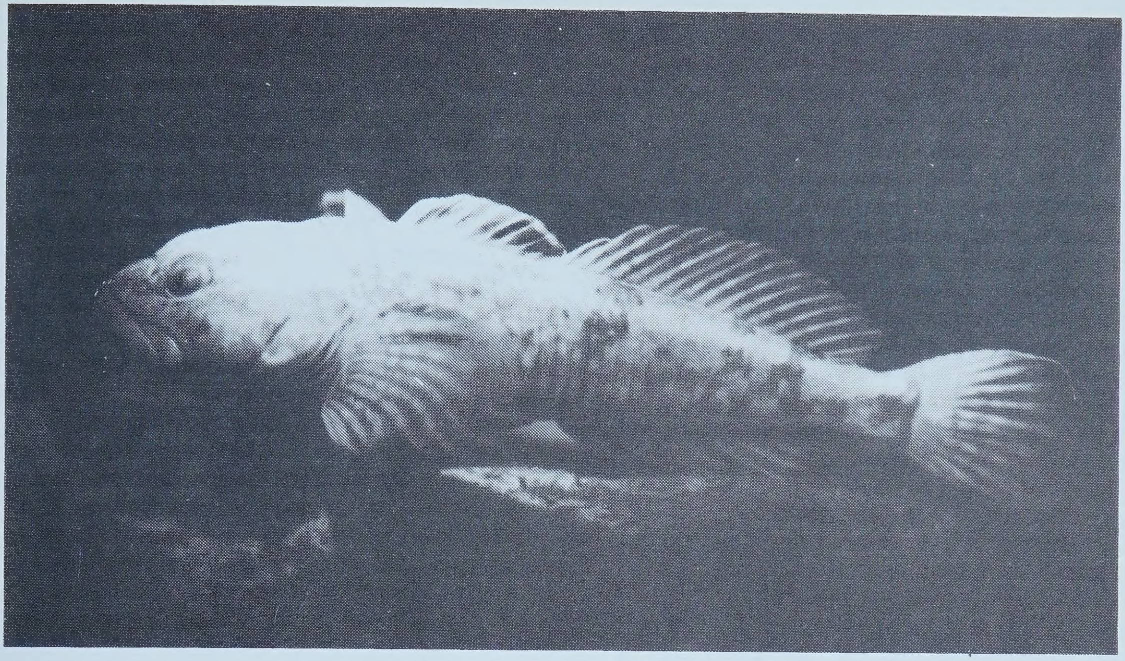


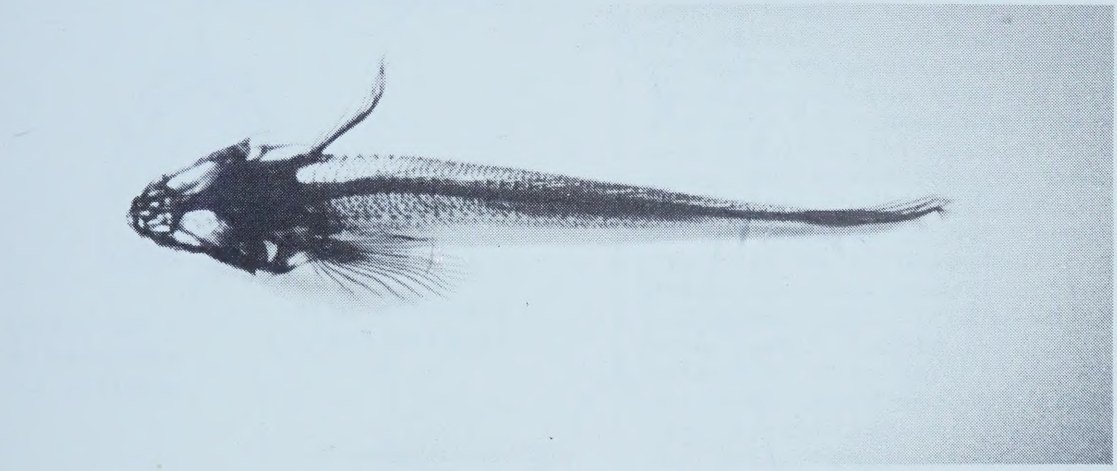
The Deepwater Sculpin differs from all other Alberta species as follows: the gill membranes are not attached to the isthmus (the triangular portion of the body between the pelvic fins and the tongue and gills); there are round plates (tubercles) on the upper surface of the sides; and there is a distinct gap between the first and second dorsal fins. *Cottus* species have the gill membranes attached to the isthmus (Figure 2) (rarely, such as in one Slimy Sculpin, UAMZ-4628, the gill membrane may be free), no tubercles are found along the sides (small prickles or their remnants may be present), and the two dorsal fins touch at their bases (there may be a slight gap between them).

The Spoonhead Sculpin has only one large pore on the midline of the lower jaw (Figure 2a); the preopercular spines are well developed and strongly curved upwards; the skin of small- and medium-sized individuals may be extensively covered with small prickles (these are often greatly reduced in adults larger than 80 mm). The other two *Cottus* species have a pore on each side of the midline of the lower jaw (Figure 2b); the preopercular spines are small and at most only slightly upturned; the body is not covered with prickles (a few may be found behind the pectoral fins).

The Shorthead Sculpin has teeth on the palatine bones (on each side of the midline in the roof of the mouth), however, these teeth may be weakly developed and obscured by overlying skin. The length of the anal fin base (Figure 3) stepped forward from the origin of the anal fin extends to a point near the front or ahead of the pelvic fin base, stepped forward from the dorsal fin origin this distance falls in front of the eye; the isthmus width is greater than the length of the eye.

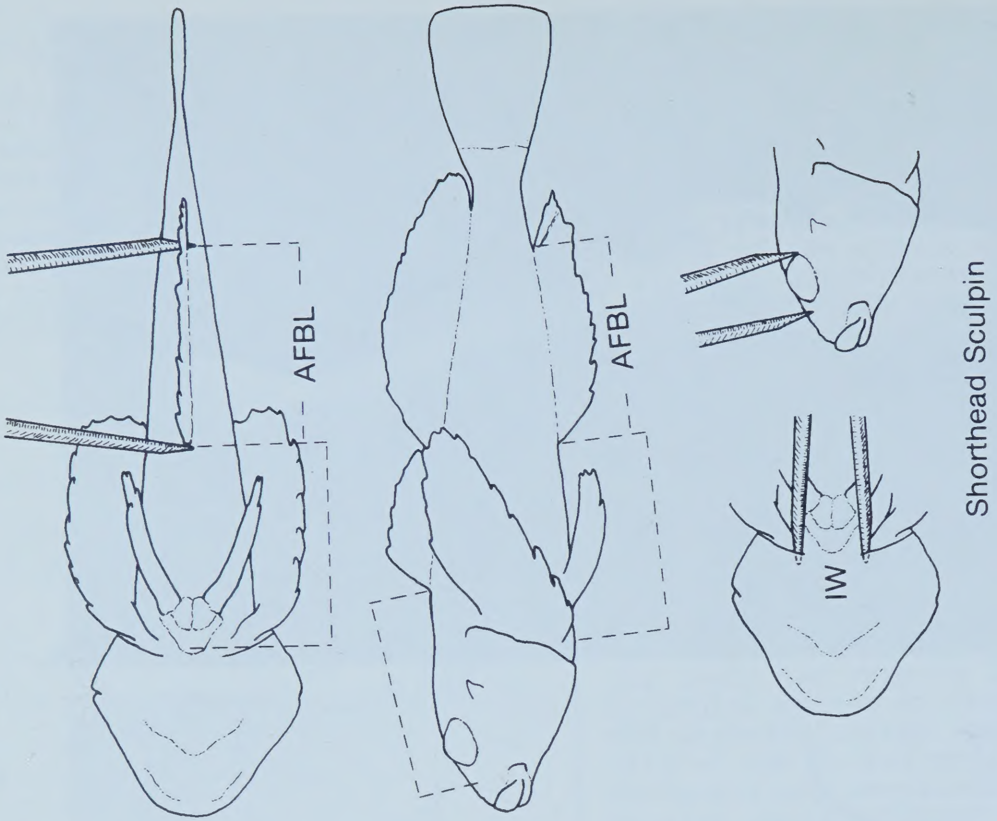
The Slimy Sculpin usually has no teeth on the palatine bones (rarely a small number of teeth may be present); the length of the anal





Upper Photo: Shorthead Sculpins have a mottled pigmentation which serves as camouflage in their natural habitat. Here an adult male is photographed in an aquarium.

Lower Photo: Young-of-the-year Spoonhead Sculpins exhibit a covering of dense prickles (modified scales) which offer some protection against abrasion in the rocky substrate in which they live. In this picture the prickles are enhanced by clearing of normal pigmentation and staining with alizarin red. (Photos: W. Roberts)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AFBL
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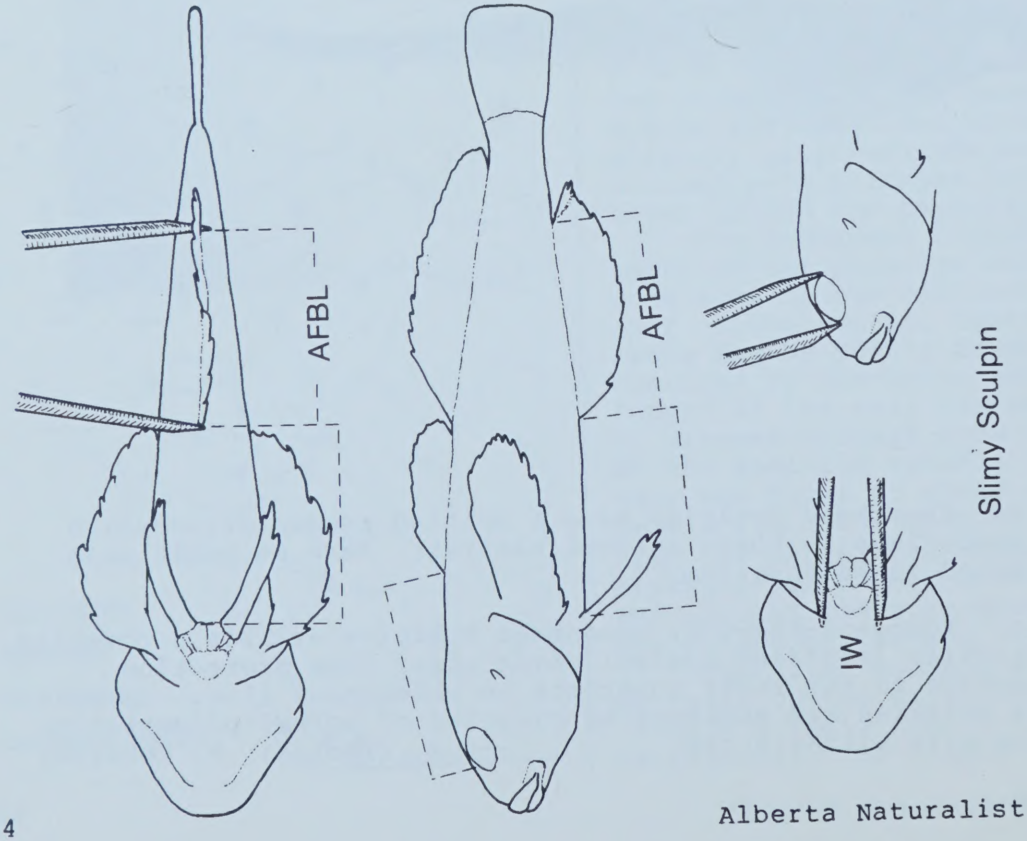
Shorthead Sculpin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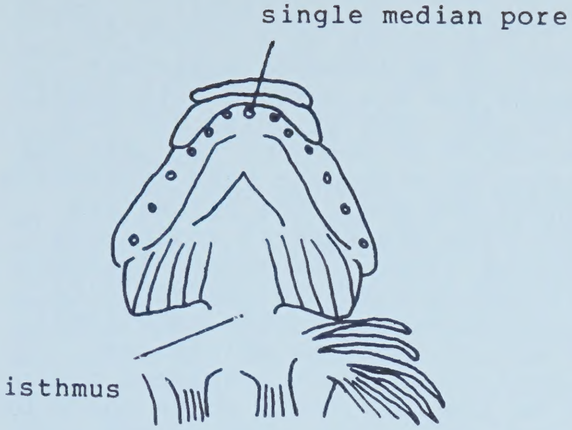
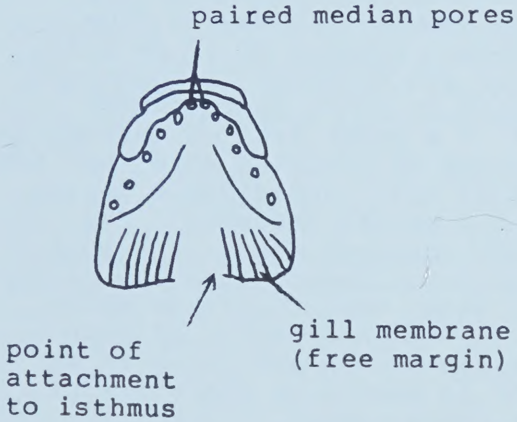


Cottus ricei

2a



Cottus cognatus

2b

Figure 2. (Above) Ventral surface of head of Spoonhead Sculpin (*Cottus ricei*) (2a) and Slimy Sculpin (*C. cognatus*) (2b).

Figure 3. (At Left) Proportional body measurements for distinguishing between Slimy Sculpin and Shorthead Sculpin.

fin base stepped forward from the anal fin origin falls between or behind the pelvic fins, stepped forward from the dorsal fin origin this distance extends to about the front of the eye; the isthmus width is about equal to the length of the eye.

Spoonhead Sculpin Life History

Only fragmented life history data, mostly from eastern North America, have been published for this species (see Auer 1982). Some aspects of the life history of this species in Alberta streams are summarized briefly in Roberts (1988).

Spawning occurs along rocky lakeshores, creek bottoms, and the margins of rivers during April and May after the water has warmed to 6° C. Nighttime temperatures may decline to 4° or 5° C and cold spring weather following spawning may result in the eggs developing at lower temperatures than those occurring at the time of spawning. The male Spoonhead Sculpin selects a suitable site, usually under a rock, and advertises by means of the bright yellow border on the distal portion of his first dorsal fin that he is prepared to spawn. Males are intolerant of other males and other small fishes and drive them away. Female sculpins are tolerated only until they have attached their eggs in a sticky mass to the underside of the rock. The male fertilizes the eggs and drives the female away.

Males may spawn with more than one female. Of nineteen males found guarding eggs, 12 had single egg masses, three had two, and five had three egg masses. The males with more than one egg mass were large individuals. One large piece of shale was attended by three male sculpins spaced as far apart as possible, with each male guarding one or more egg masses. The number of eggs in egg masses varies substantially as female Spoonhead Sculpins contain from 280-1200 eggs, depending on the size of the female.

Care for the eggs is greater than for many fish species. The male fans the egg masses intermittently with his large pectoral fins. This cleans the eggs and provides them with fresh clean water and oxygen. The male expands his head by flaring the preopercular spines and gill covers, which serves to scare away other fish approaching the eggs. This may be accompanied by "barking" or snapping at the intruder and may be followed by the sculpin turning to expose his sides and dorsal fin which is held erect.

Hatching occurs after three weeks of incubation at 8° C, but as spawning often occurs at a time when water temperatures rise to over 10° C, incubation time may be shortened. The naked larvae, about 6.7-7.0 mm long, have a large yolk sack and swim away from the nest. At first they struggle to swim upwards but repeatedly sink to the bottom. The male pays little attention to the larvae. As the larvae tend to swim toward light, they end up being distributed in the shallows near the surface and in quiet water, where they encounter relatively warm water, and food, in the form of microinvertebrates such as crustaceans and insect larvae. Few water-dwelling predators are found in the shallows near the margin. The larvae are active during daylight and forage on and over the substrate until later in their first summer when they begin to behave like larger sculpins and seek cover by day and forage actively at night.

The larvae at a length of about 10 mm resemble miniature adults and are covered with small prickles. The prickles are best developed in young of the year and gradually disappear with increasing length and age. The spines are lost from the ventral and caudal regions first. As these regions are most subject to contact with abrasive surfaces (the substrate) it may be that the spines are eroded away. Most specimens over 80 mm long are found to be naked or nearly so. Often when spines are absent, flat discs (the bases of spines) remain embedded in the skin.

Young of the year sculpins grow to about 40-47 mm by the end of their first summer in the Red Deer River. By the end of the second summer they may be from 63-74 mm. Lengths of 85 mm and greater are attained by Spoonhead Sculpins in their third summer. There is a great deal of overlap in the sizes of sculpins more than two years of age. Individuals larger than 110 mm are uncommon. The largest specimen noted is a male 135 mm total length from the Clearwater River near Corkscrew Mountain. Some individuals of both sexes are mature and spawn at an age of 23 months at the start of their third summer.

Feeding was not studied in detail, however, all stomachs examined contained invertebrates. The largest invertebrates available, perlid stoneflies such as Hespero-

Table 1. Fin ray counts for Cottus confusus from the Milk River, Alberta.

	Dorsal spines			Dorsal rays			Anal rays			Pectoral rays			Pelvic rays	
	7	8	9	16	17	18	11	12	13	13-13	13-14	14-14	1-4	1-3*
N	18	57	4	8	57	11	2	38	36	35	15	26	79	6

* A fourth ray may be present but less than 3/4 as long as longest ray

perla, were frequently eaten by both wild specimens and captives in aquaria. Although Spoonhead Sculpins are small fish, they have relatively large mouths, enabling them to forage upon such large invertebrates.

Spoonhead Sculpins are eaten by a variety of trout and char species, Northern Pike, Burbot, Walleye, and Sauger in Alberta streams. They are probably eaten by other species such as Mountain Whitefish and Goldeye. In the shallows of large streams and in small creeks they may be eaten by predators who actively forage between and under rocks such as the American Dipper (Cinclus mexicanus), the American Water Shrew (Sorex palustris), and the Burbot (Lota lota).

Shorthead Sculpin Life History

The only populations of the Shorthead Sculpin known to occur east of the continental divide are in Montana and Alberta. Meristic data for specimens from the Milk River are given in Table 1.

The biology of this species east of the continental divide is poorly known. Like other Cottus species, post-larval subadults and adults are found between and under rocks on the bottom of small foothill and mountain streams and in similar habitat along the margins of the St. Mary River. Like other sculpins they probably seek cover by day and forage at night, although a few specimens were seen on top of the substrate in daylight during November. No quantitative study of feeding was undertaken but qualitative examination of stomach contents revealed that this species is largely insectivorous and eats aquatic insect larvae. Peden and Hughes (1984) found insect remains in most Flathead River, B.C. specimens while fish remains were found in only one individual.

Spawning occurs in the late spring as with the other Cottus species in Alberta. In mid-May, males were found guarding eggs under rocks in Lee Creek, a tributary to the St. Mary River. The water temperature at this time was 15° C in the small, slow-flowing tributary. At the same time in the St. Mary River, where the water temperature was only 7.5° C, gravid females were common and no males were observed guarding eggs. The water temperature in Lee Creek was probably much higher than that necessary to initiate spawning, the threshold temperature having been surpassed as the creek warmed rapidly. Other Cottus species spawn at temperatures from 5-10° C. Hatching probably occurs in two to three weeks depending on the water temperature. Young of the year attain lengths of 30-40 mm by the end of the first summer. Yearlings are at least 50 mm by this time. Both sexes may mature and spawn at an age of 23 months. The smallest mature female examined was 52.3 mm total length. Most females contained 100-250 eggs. The maximum egg number was 354 in a large (80.7 mm) individual. The maximum size noted for this species in Alberta is a male of 108 mm total length from the Milk River. As with the spoonhead and other sculpins, Shorthead Sculpins are probably eaten by birds, mammals and other fish.

Sculpins not only provide food for a variety of predators but also provide an occasional surprise for anglers especially when fishing with small, baited hooks and much less frequently on artificial flies. They are very "watchable" fishes as they may be viewed by carefully turning over rocks in the shallows of clear streams. They may also be seen by night-lighting, when they have left their daytime cover to forage at night.

Sculpins are indicators of stream quality; they require clean water and clean substrate in order to prosper. In clean but productive rivers such as the Red Deer and Tay where Spoonhead Sculpins reach their greatest abundance,

continued on page 153

The Status of Small Butterwort in Alberta

Ross I. Hastings & Robert A. Ellis

The Small Butterwort (Pinguicula villosa) is a member of the Lentibulariaceae, a family of small insectivorous herbs of aquatic or terrestrial habitats. Members of the genus Pinguicula are characterized by a terrestrial habitat, fleshy basal leaves and small purple flowers. Pinguicula villosa is differentiated from the Common Butterwort (Pinguicula vulgaris) by a glandular-villous scape, smaller corolla and a tiny habit (Porsild and Cody 1980; Moss 1983). Pinguicula villosa is a perennial herb that has its overwintering bud at the soil surface. This bud is enclosed in the plant's fleshy basal leaves.

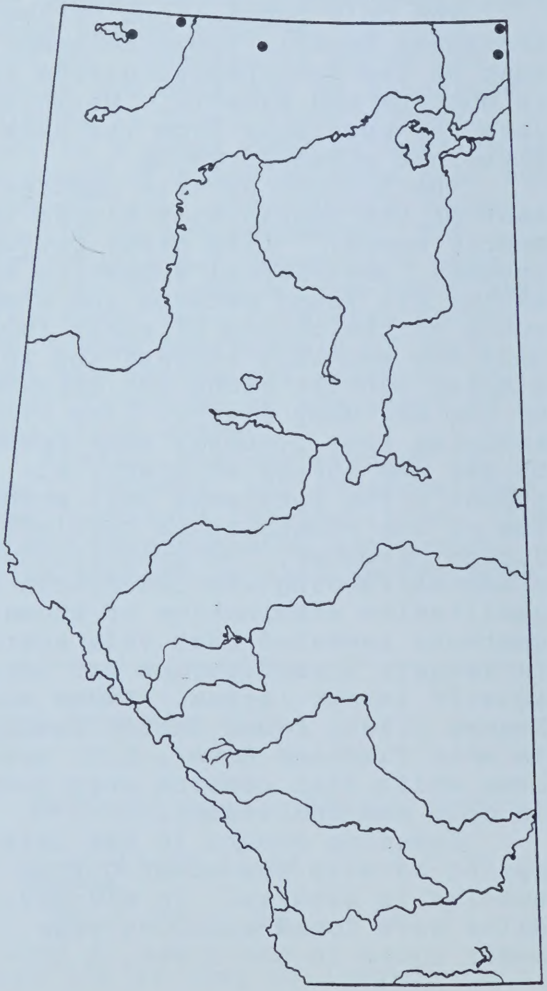
The generic epithet, Pinguicula, is derived from the Latin for fat and apparently refers to either its fleshy basal leaves or to the greasy feel of the leaves (Polunin 1959). The specific epithet, villosa, refers to its glandular-villous scape.

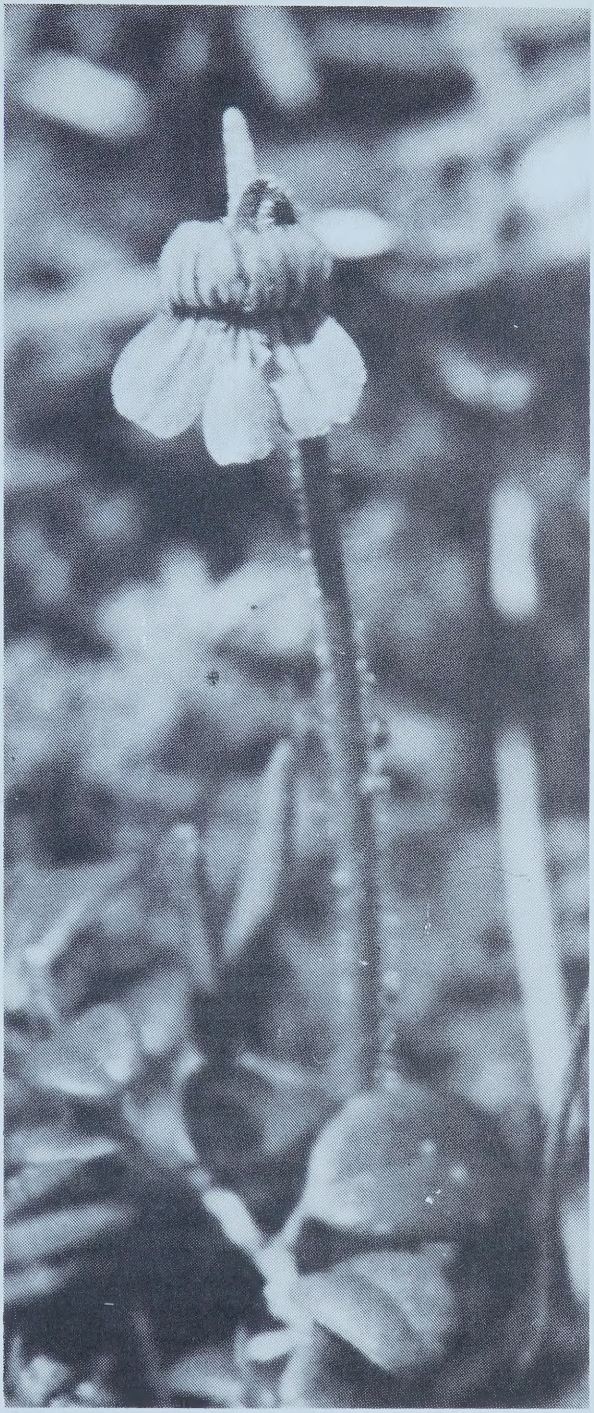
Pinguicula villosa is a circumpolar subarctic plant with large gaps in its distribution (cf. Hulten 1968; Porsild and Cody 1980). It is common in Alaska, the Yukon Territory and the Northwest Territories. It reaches its southernmost limit on Vancouver Island and, while apparently rare in British Columbia and Saskatchewan (Maher et al. 1979; Straley et al. 1985), extends across Canada to the coast of Labrador. Pinguicula villosa occurs in scattered pockets in eastern Asia and has an extensive population in Scandinavia, but is apparently absent throughout most of the northern U.S.S.R. In North America, the northernmost limit of this species is closely tied to treeline (Porsild and Cody 1980), although it can occur in low arctic tundra (e.g., Hastings 1984). In general, P. villosa's southernmost limit appears to be within the Boreal Northlands or Boreal Subarctic ecoregions of Canada although, as stated above, it can occur in the coastal rainforest.

Distribution in Alberta

The first published record for P. villosa in Alberta was by Lee et al. (1979) from a study on the

Figure 1. Localities for Pinguicula villosa in Alberta.





Small Butterwort (Pinguicula villosa).

(Photo: J.D. Johnson)

Caribou Mountains. Based on this single record Packer and Bradley (1984) classified the species as rare in Alberta. The species has subsequently been collected at least 4 times across northern Alberta (Fig. 1). In northwestern Alberta, Fairbarns (1983) reported it to be common in Sphagnum bogs in the Cameron Hills. Hastings and Ellis (1988) found the species in two separate localities on the eastern shore of Bistcho Lake, and Wallis and Wershler (1984) reported the species to be scarce at Wylie and Colin Lakes on the Kazan Upland in northeastern Alberta. In the summer of 1988 we found a population on an island in Andrew Lake, also on the Kazan Upland, but about 25 km north of Wallis and Wershler's study area. There are now five records for this species in Alberta, stretching from the northwestern to the northeastern corner of the province.

Natural History

On continental North America, P. villosa extends in elevation from sea level along the Pacific and Arctic coasts to at least 1500 m in the Ogilvie Mountains in the Yukon Territory. In Alberta, it occurs from 400 m at Andrew Lake to 910 m on the Caribou Mountains.

Polunin (1959) reports that P. villosa grows in relatively sheltered Sphagnum bogs. Porsild and Cody (1980) state that this species occurs on hummocks in Sphagnum bogs. Collections of specimens from the southern Northwest Territories and northern Saskatchewan support these observations. In Alberta, P. villosa occurs in various Black Spruce (Picea mariana)/ Labrador Tea (Ledum spp.)/ Sphagnum associations. At Bistcho Lake we found the species in relatively open woodlands (Hastings and Ellis 1988) and on the Caribou Mountains it was found on a sparsely treed palsa complex (Lee et al. 1979). However, at Andrew Lake we found it in an almost closed-crown forest. It appears that in Alberta, P.

villosa occurs in relatively undisturbed sites that are at least partially sheltered by a tree or shrub canopy.

Our observations suggest that P. villosa is highly associated with poorly-drained, organic cryosolic soils. However, some specimens in the Northern Forestry Centre Herbarium (CAFB) have been collected from well-drained, Brunisolic Turbic Cryosols in the District of Keewatin.

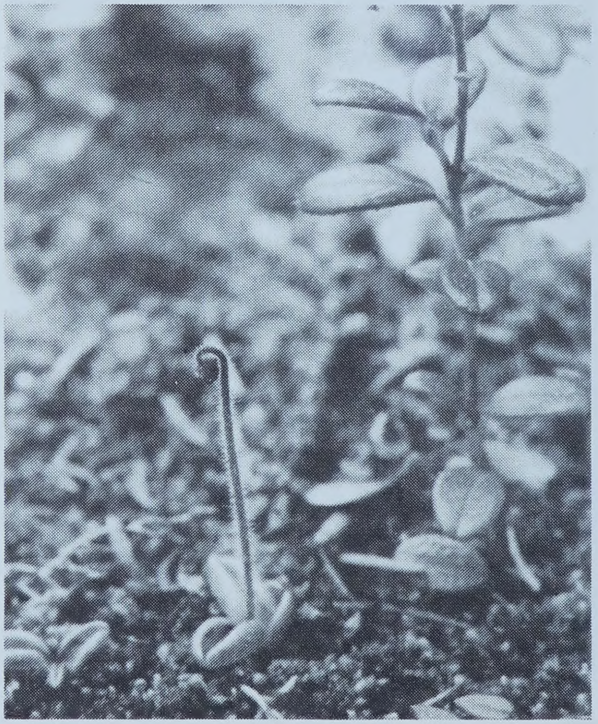
The phenology of P. villosa is poorly known. It was observed to be in flower on 13 June 1987 at Bistcho Lake and on 15 June 1988 at Andrew Lake. Immature fruits were noted on specimens collected on the Caribou Mountains on 22 July 1974 and the specimen from the Cameron Hills was in fruit on 10 August 1982. The range of flowering dates from the western Canadian specimens we examined were from 14 June 1969 and 14 June 1984 from the Ogilvie Mountains and Johnson Lake Saskatchewan, respectively, to 22-25 July 1949 at Great Bear Lake, N.W.T.

Like other members of the Lentibulariaceae, P. villosa is insectivorous. It captures insects on a sticky mucilage secreted by glands on its leaves (Polunin 1959). This insectivorous habit is probably an adaptation to a nutrient-poor regime, typical of bogs in northern Alberta.

Rarity Status of Pinguicula villosa in Alberta

For Alberta, Packer and Bradley (1984) define rarity on the basis of five or fewer locations within the province. Theirs is an absolute classification, either a species is considered rare or it is not. Straley et al. (1985), working with the British Columbia flora, have a more comprehensive classification involving several different types and degrees of rarity. When Packer and Bradley first classified P. villosa as rare in Alberta there was only one known locality, that from the Caribou Mountains in the Boreal Subarctic

The typical Picea mariana/Ledum spp./Sphagum habitat of Pinguicula villosa at Bistcho Lake.
(Photos: R.I. Hastings)



Pinguicula villosa on a Sphagnum hummock at Andrew Lake.
Note the tiny size of the plant compared to the Bog Cranberry (Vaccinium vitis-idaea) in the background.

ecoregion. Strictly following Packer and Bradley's definition, P. villosa may still be considered rare in Alberta as there are only five known localities, the maximum number accepted by Packer and Bradley. However, given the relatively unexplored nature of P. villosa's habitat and the recent successes in collecting this species across northern Alberta, it seems likely that considerably more than five populations exist in the province. While almost certainly not common, the species is also almost certainly not rare.

This ambiguous status of P. villosa in Alberta leads us to use the classification of Straley et al. (1985). Following their classification, P. villosa would now be classified as R4-"plant taxa that are restricted in their general distribution in the province and often represent the northern or southern limits of more commonly distributed plants." Based on the data available to Packer and Bradley, the species would have been classified as R1-"plant taxa that are represented by a single or few known populations..." The flexibility and utility of the Straley et al. classification is evident in that it allows us to recognize the regional significance of this plant and its relatively uncommon status, but downplays its supposed rarity.

Though current collections suggest a restricted distribution for P. villosa in Alberta, we suggest that it is not as rare as the literature suggests; rather that it is under-collected. Exploration of the wetlands in Alberta's far north may reveal new populations of this plant. Further, P. villosa may be expected south of its present known range. The Buffalo Head Hills are at a latitude (57° 45' N) and elevation (790 m) sufficient to support a Boreal Subarctic forest type (Strong and Leggat 1981). It is reasonable to expect that P. villosa will be found in the Black Spruce/Labrador Tea/ Sphagnum forests in this area.

Acknowledgements

We wish to thank Phil Stepney, Assistant Director of the Provincial Museum of Alberta and Julie Hrapko for arranging our expeditions to Bistcho and Andrew Lakes. Bruce McGillivray and Julie Hrapko reviewed an earlier version of this paper. Their editorial comments are appreciated.

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Authors' Address:
Provincial Museum of Alberta, 12845-102
Avenue, Edmonton, Alberta T5N 0M6.

George Pegg: Naturalist (1910-1988)

Roger Vick

(Editor's Note: This biography of the late George Pegg first appeared in Kinnikinnick Vol. 4(3):59-64 (August 1983). It is reprinted here with permission with some modifications.)

If there are unsung heroes in the field of natural history, then George Pegg of Alberta must be one.

But for a crop failure in 1911, George would likely have been raised on a large ranch near Red Deer. Instead he spent much of his life on a small homestead some 80 km northwest of Edmonton.

George Pegg was born in 1910 in Ontario, the second of eight children. His father was a newly settled immigrant from London, England; his mother a Torontonian. In the year George was born they decided to sell up and head out west with a group of settlers who planned to invest in a large Alberta ranch.

After the disastrous crop failure the first year in Alberta, members of the group found themselves with no financial reserve, and the families went their separate ways. George's parents then started a homestead in the district that is now Glenevis; in 1913 a remote location and accessible only by horse or oxcart over unpaved trails through the bush. The breaking of land and early farm work was accomplished with oxen.

With his older brother Fred, young George would find his entertainment in the unbroken woodlands that stretched for miles around the homestead. Opportunities for schooling were minimal in that region in the first decades of the century, and children of all ages would gather in the typical one-room schoolhouse to be taught by a university student, or regular teacher.

At the age of twelve George was impressed by a sales circular distributed by a Toronto lumber company to advertise their products. Among other things it illustrated birdhouse construction and some rough, but to George quite fascinating, sketches of common songbirds. This was all that he needed to embark upon a long and dedicated study of birds in that region. The boys later obtained the Chester A. Reed pocket bird book series, and then (for the sum of 75 cents) the 380 page Birds of Western Canada by P.A. Taverner -- published under the auspices of the Canada Department of Mines.

Between farm chores, George would try to identify the wild plants of the countryside and he found it to be a frustrating exercise. There was no one to advise him on the common names of plants, never mind the botanical names that were essential in determining closely related species. The local residents were frankly amazed that he would even notice the multitude of diverse and often insignificant wild flora.

Once again a book came to the rescue, this one by the Alberta photographer and botanist William Copeland McCalla, Wild Flowers of Western Canada (1920) which included sixty black and white photographs of common flowering plants. And so it was that George grew up not only with the farm, but also with an exceptional appreciation of the surrounding wildlife -- and good books.

As a young man George was faced with the depression years of the 1930's. At the age of 26 he set out to travel the United States, and for the next four years worked his way through the country from Florida to California, return-

George Pegg (at right) on a visit to the Wagner Natural Area in 1982. (Photo: J.D. Johnson)

ing to a dairy operation in the state of New York. He returned to farm the home place in 1940.

In 1945 George decided that there should be some meteorological record established in his area, and purchased equipment that allowed him to take official precipitation and temperature records. He kept rainfall records for Glenevis, without omission, for a period of over 40 years. The temperature records are virtually complete, lacking only ten days in 1960 when cows broke the thermometers, and for a period in the winter of 1982-83 when George was confined to hospital with a congenital respiratory ailment.

By the 1950's George had settled into the life of a confirmed bachelor, farming his land, and interesting himself in his garden collection of native and introduced plants. While his leisure interests were not highly unusual, it was notable that George continued his education by accumulating an impressive library to help in his botanical avocation. He also joined a number of botanical and natural history societies, and attended local meetings.

Among his books were monographs and regional floras from different floristic regions of the world. These books would often include a reference to Alberta in their notes on the natural distribution of the plant species, and George would extract and compile this information. This served in lieu of a yet unpublished flora of the province.

It was also in the mid 1950's that George set about systematically collecting the weeds of the local County of Lac Ste. Anne, identifying most by reference to plant keys in such works as Flora of the Pacific Northwest by Britton & Brown, and pressing the plants as herbarium specimens to serve as a record of his observations.

Plants that he could not identify with the help of his books, he took to the University of Alberta. There he met Dr. Ezra H. Moss, head of the Department of Botany. At that time Moss was approaching retirement, and making a special effort to complete the first comprehensive reference work for professional use and serious study in the province -- The Flora of Alberta.

These two men of dissimilar backgrounds found common ground in their botanical interests. Pegg was in his element in the field, and would not hesitate to travel the roughest terrain or wade deep into icy water after a choice plant specimen. He also had the uncanny knack of locating camp no matter what the weather or topography, and regardless of how many changes of direction had been made in featureless country during the course of a day. He would therefore find it highly amusing that Moss was one of those people who had the ability to become hopelessly lost by turning once -- even when still within sight of the car or camp.

Pegg's contribution to the understanding of the diverse Alberta flora was notable. Of particular importance was the discovery by George Pegg of an area (about 40 km in diameter) that had escaped the glacial scrubbing and eradication of earlier plant life that took place during the last ice-age. This particular refugium is in the general area of Cadomin at what was once the mining town of Mountain Park to the south. (The coal mine was closed in the late 1940's, and the buildings removed or burned in accordance with government policy.)

As a result of George's involvement, The Flora of Alberta, when it was published in 1959, was expanded by more than one hundred species. Viola selkirkii is a notable example of a Pegg discovery in Alberta, together with Angelica genuflexa, and the fern Cystopteris montana.

After E.H. Moss published his Flora (in which Pegg was duly recognized as a contributor of important material) the two men continued to cooperate. They co-authored a 27 page paper in 1962 (the year before Moss died) entitled "Noteworthy Plant Species and Communities in west-central Alberta." This was published the following year in the Canadian Journal of Botany (Volume 41).

Pegg's collections recorded in this paper extended the known ranges of more than 50 species in Alberta. One remarkable discovery was a bur-reed, Sparganium glomerata, that had only been found in four other locations in North America -- Labrador, Quebec, northern Minnesota and Dawson in the Yukon. Herbarium specimens of the new finds were deposited with the National Museum of Canada and the Central Experimental Farm, Ottawa, as well as with the University of Alberta.

With the more straightforward botanizing now taken in his stride, George turned his attention to the willow complex, and mastered them to the point where Dr. George W. Argus of the Canadian Forestry Service, Ottawa (a noted authority on the genus Salix) visited with George Pegg at his Glenevis homestead while touring western Canada in 1971. A couple of years earlier George had donated a live collection of native willow species to the Botanic Garden, a welcome addition that was examined with interest by Argus on his visit.

With Moss gone things were not the same between Pegg and the herbarium at the University, and he felt that his contributions during the past 20 years had largely fallen on stony ground.

New plant species are still being discovered south of the Canadian border, and George believed that there are some new species to be found in Alberta for those who will diligently search for them. One possible new species, at least to Alberta, is a willow that he noted in the Swan Hills area that keys somewhere between S. myrtillifolia and S. commutata. Cuttings have been supplied to the Botanic Garden for growing and further study.

George lived with the company of his plants and books on the homestead that was his home for nearly seventy years, shunning any technology much more advanced than a wood-burning stove. While he kept a loud-chiming clock, it was not abused by subjecting it to the spring and fall time changes. George preferred to live by his own internal clock, and mark his time by the seasons.

Author's Address:
Devonian Botanic Garden, Edmonton, Alberta
T6G 2E1.

Although I did not know George Pegg well personally, I enjoyed the few visits I did have with him over the years. I first met George in the fall of 1976 at an Edmonton Natural History Club meeting just shortly after I had arrived in Edmonton from Calgary and was just beginning to know the people and the natural history scene in the city. Sitting down for coffee after the meeting, an "older" gentleman, whom I did not know at the time, came and sat down across from me. He introduced himself as George Pegg and I immediately recognized the name from my university days studying botany in Calgary. When he found out that I too was botanically inclined and that we knew some people in common, the conversation began to flow freely. During the few subsequent meetings with George I was always enthralled listening to him. I enjoyed his recollections about his early botanical experiences and was particularly amused by some of the stories he told about the times he spent working with E.H. Moss, whose sense of direction (or lack of it!) assumed legendary proportions under George's telling. I was also much impressed by George's general knowledge of the Alberta flora and I learned many interesting things from him. It is unfortunate that more of George's knowledge did not make it down on paper. He did not like being with large groups of people and he unfortunately felt intimidated by some of the "ivory tower" type of professional botanists, some of whom admittedly look down on amateurs with didain. It is these so-called professionals who are the poorer for their attitude, as people like George contribute a great deal to our knowledge of natural history.

George had established quite a botanical garden and arboretum on his farm just north of Glenevis. The variety of "exotic" herb, shrub, and tree species that not only grew, but flourished on his property was truly remarkable and a tribute to George's lifelong love of plants. The one specimen which absolutely blew me away when he showed it to me on a guided tour was the Bristlecone Pine that he had managed to establish. I do not know if there is another one like it in Alberta. Sadly, the garden has been badly overgrown with thistles this past summer after George's passing last February at the age of 77. However, there is strong interest from the Pegg family and the local community to have the garden and homestead preserved as a provincial historical site. A non-profit group, the George Pegg Botanic Garden Society, has been formed to maintain the garden George so lovingly developed.

J. Derek Johnson

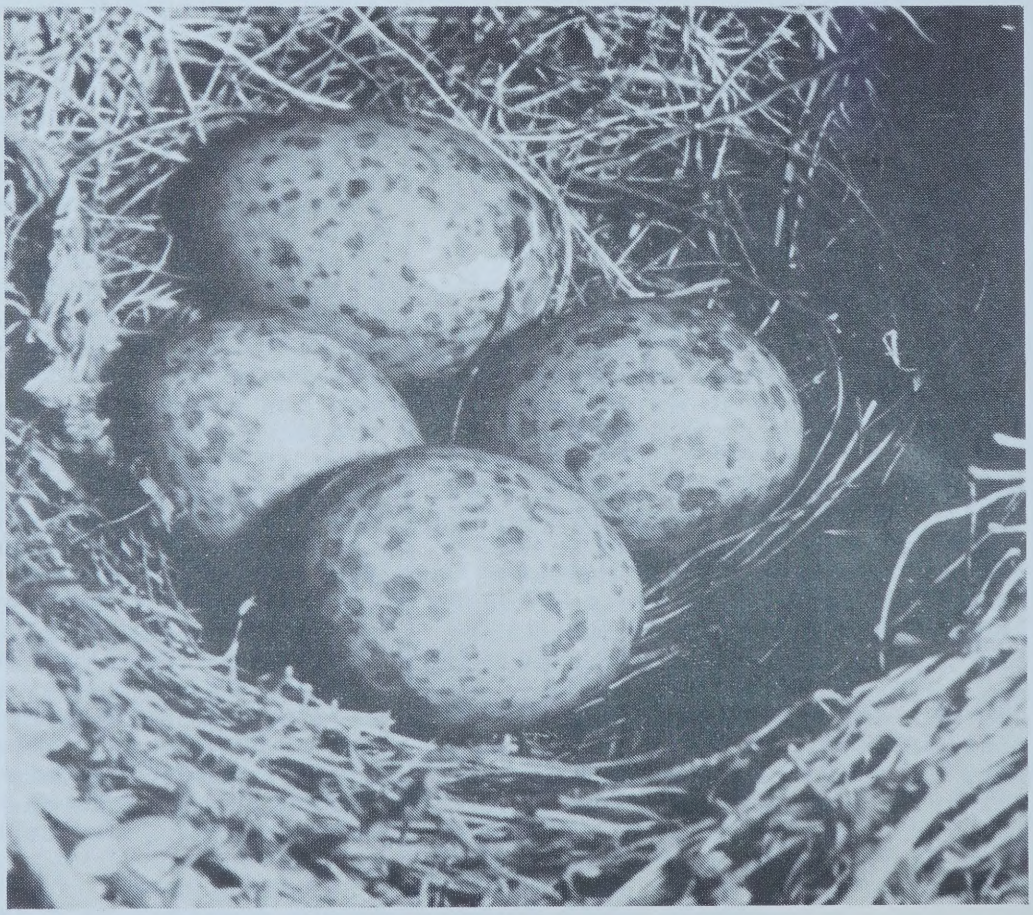
A Second Northern Mockingbird Breeding Record for Alberta

Edgar T. Jones

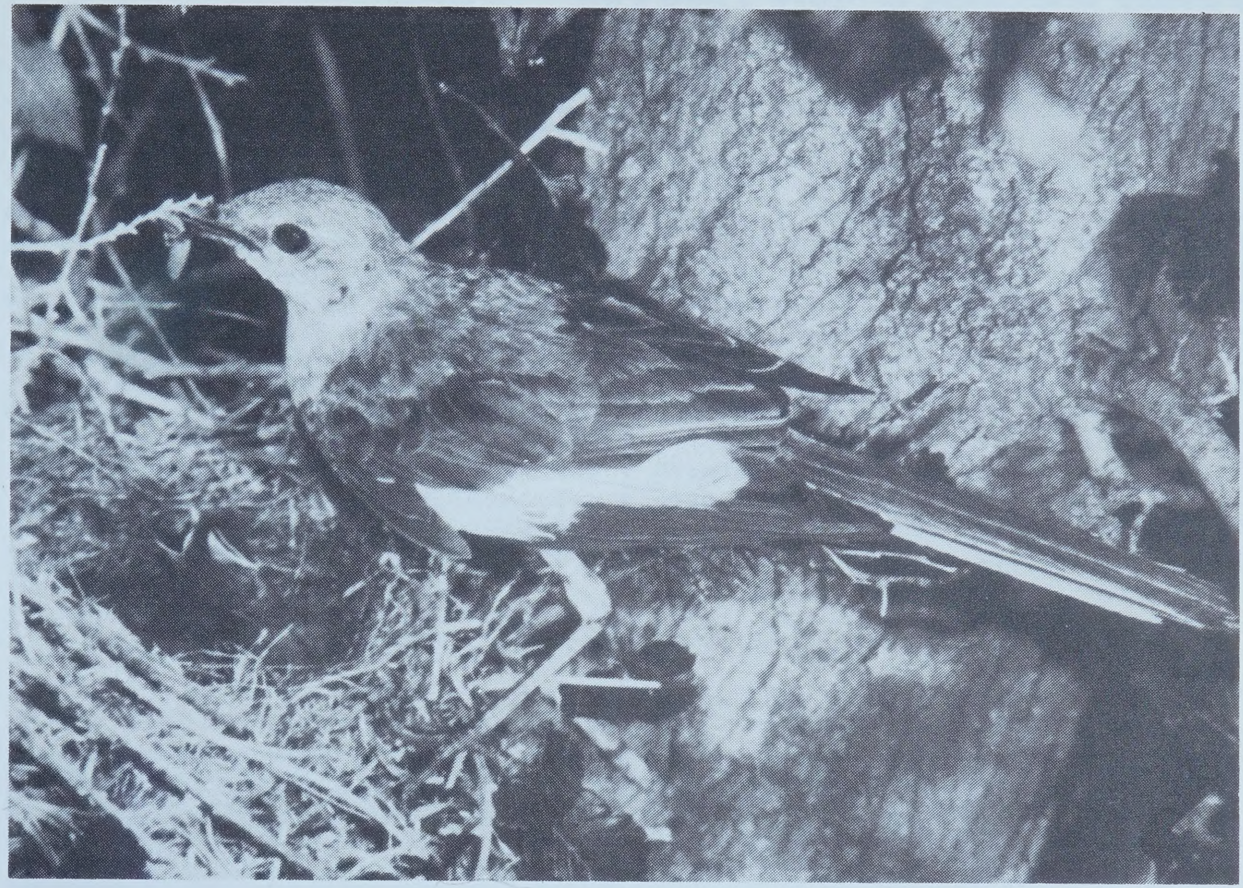
It appears that the Northern Mockingbird is slowly but surely expanding its range to the northwest. Sightings over the past few years in Alberta seem to be on the increase and a second breeding record is now documented.

My first encounter with this species in Alberta occurred in July, 1964 when a good friend, Mr. Harvey Burns of Leduc, was advised of a possible nest on the farm of Mrs. Speight near Cadogan, Alberta. A trip was made down by Mr. Burns, Professor Cy Hampson of the University of Alberta, and the writer to document this as it was the first known breeding record for the province. The nest was located in a pine tree at 4 m and contained five half-grown young. Professor Hampson took 35 mm color stills, one of which was used in Birds of Alberta (Salt and Salt 1976). The writer also documented this nest by filming the nest and adults in 16 mm color motion film.

The current nest was found by the writer while walking to band some young Ferruginous Hawks near Esther, Alberta. The nest was in a 2 km long planted hedgerow separating two fields. The nest was discovered on July 16, 1988 and it contained four eggs with a blue-green background heavily blotched



Nest of Northern Mockingbird. (Photo: Edgar T. Jones)



Northern Mockingbird. (Photo: Edgar T. Jones)

and spotted. Western Kingbirds were numerous in the close proximity and showed a great deal of alarm, but the appearance of the eggs quickly dispelled any thought of a Western Kingbird nest. It was 20 minutes later before the adult Mockingbird was sighted.

The nest was at 2.1 m in a 7.6 m elm, basically made of grasses, but included some tumbleweed. The eggs were fresh at the time of discovery and all hatched around July 22 to July 26. Two of the young were large enough for banding, the other two were too small on July 28th at the time of our second visit.

I would imagine that there are not many people who would have any reason to walk a hedgerow/field divider such as this. If similar sights were checked, it would appear to me that quite a few more nesting records would be turned up. From my personal records my only other Alberta sighting was on May 24th, 1974 near Jenner, Alberta, when a single bird was observed.

I think it likely that this bird is not as rare in Alberta as one would think. Except in the spring season, these birds seem to be quiet and secretive and can easily be overlooked.

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Author's Address:
43 Westbrook Drive, Edmonton, Alberta
T6J 2C8.

Feeder Watching is More Than Fun

Erica H. Dunn

Project FeederWatch, a continent-wide survey of bird feeders, was begun last year by the Cornell Laboratory of Ornithology and Canada's Long Point Bird Observatory. The project is an expanded version of one run in Ontario for 11 years, designed to answer questions frequently asked by feeder owners. "Why are there so few Evening Grosbeaks this winter?" "What can I do to discourage Starlings?" "Why does my neighbor get all the Blue Jays while I have none?"

Feeder surveys can start to answer such questions by documenting the numbers and kinds of birds at feeders. Moreover, work in Ontario showed that bird numbers at feeders could be used to help monitor winter bird populations. The continental coverage of Project FeederWatch should allow scientists to follow changing winter distributions throughout North America, both within and between years.

Last winter, over 4,000 participants from Alaska to Florida showed that the Dark-eyed Junco was

Table 1. Most widespread and abundant feeder species at North American feeders during winter 1987-88, as shown by Project FeederWatch. Species listed are those seen at 50% or more of all feeders (column 1), or with an average weekly abundance per feeder of 1.0 or more birds (column 2). Column 3, "average where present", also shows the average weekly abundance, but includes data only from feeders where the species was actually sighted. Column 4 shows the average weekly number of each species at the single feeder where that species was most abundant.

Species	Percentage of feeders visited	Average weekly number	Average where present	Highest weekly average
Dark-eyed Junco	87	5.2	6.0	60
Pine Siskin	65	7.0	10.8	278
House Sparrow	64	11.2	17.5	198
Black-capped Chickadee	57	1.8	3.2	44
American Goldfinch	56	5.7	10.2	198
Downy Woodpecker	52	0.5	1.0	7
European Starling	51	2.3	4.5	112
Blue Jay	49	1.2	2.4	28
House Finch	48	5.5	11.5	172
Northern Cardinal	48	2.4	5.0	46
Mourning Dove	40	2.8	7.0	159
Red-winged Blackbird	40	1.8	4.5	73
Purple Finch	34	1.1	3.2	45
Common Grackle	34	1.1	3.2	35
White-crowned Sparrow	26	1.0	3.8	46
Evening Grosbeak	23	2.5	10.9	128
Common Redpoll	13	5.1	39.2	69

the most widespread species at feeders, by a large margin (see Table 1). The House Sparrow was more than twice as abundant, even though it was seen at fewer feeders. An outstanding feature of last winter was the unusually large number of Pine Siskins in all parts of the continent.

The most abundant species are generally those that occur coast to coast, but detailed results from all regions show fascinating differences in the less common species. People in the deep south (whose daffodils may bloom in February) are able to attract orioles and hummingbirds along with their juncos and Evening Grosbeaks, while FeederWatchers out west reported Black-billed Magpies, Gambel's Quail, and Scrub Jays.

Anyone who can identify the birds at their feeders may join Project FeederWatch. Counts are made on one or two days every second week from November to April, and recorded on special computer-readable forms. FeederWatchers pay $9.00 annually to support the project, and in return receive 4 newsletters, including a full report on results that is mailed a few months after the end of the winter season.

FeederWatch is aiming for at least 50 participants in each state and province and about 10,000 overall, so we hope you'll join us! Find out how your feeder stacks up while also contributing important scientific data. Sign up by sending your name and address and $9.00 to: Project FeederWatch, Long Point Observatory, P.O. Box 160, Port Rowan, Ontario N0E 1M0.

Common Redpoll at feeder. (Photo: Edgar T. Jones)

Another Casualty of an Unintentional Bird Snare

J. Derek Johnson

In an earlier note (Johnson 1987), I related our experiences with a polyester thread land measurer and how we were creating an unintentional bird snare through our use of it. Not unexpectedly, this thread has created a local hazard in other areas as well, as the accompanying photograph illustrates.

The unfortunate bird in this instance is a Gray Jay and the site is a mixed white spruce/lodgepole pine forest along the Imperial Fire Tower road, W of Highway 32, N of Whitecourt. The bird was found quite dead, entangled in the thread, on September 17, 1987.

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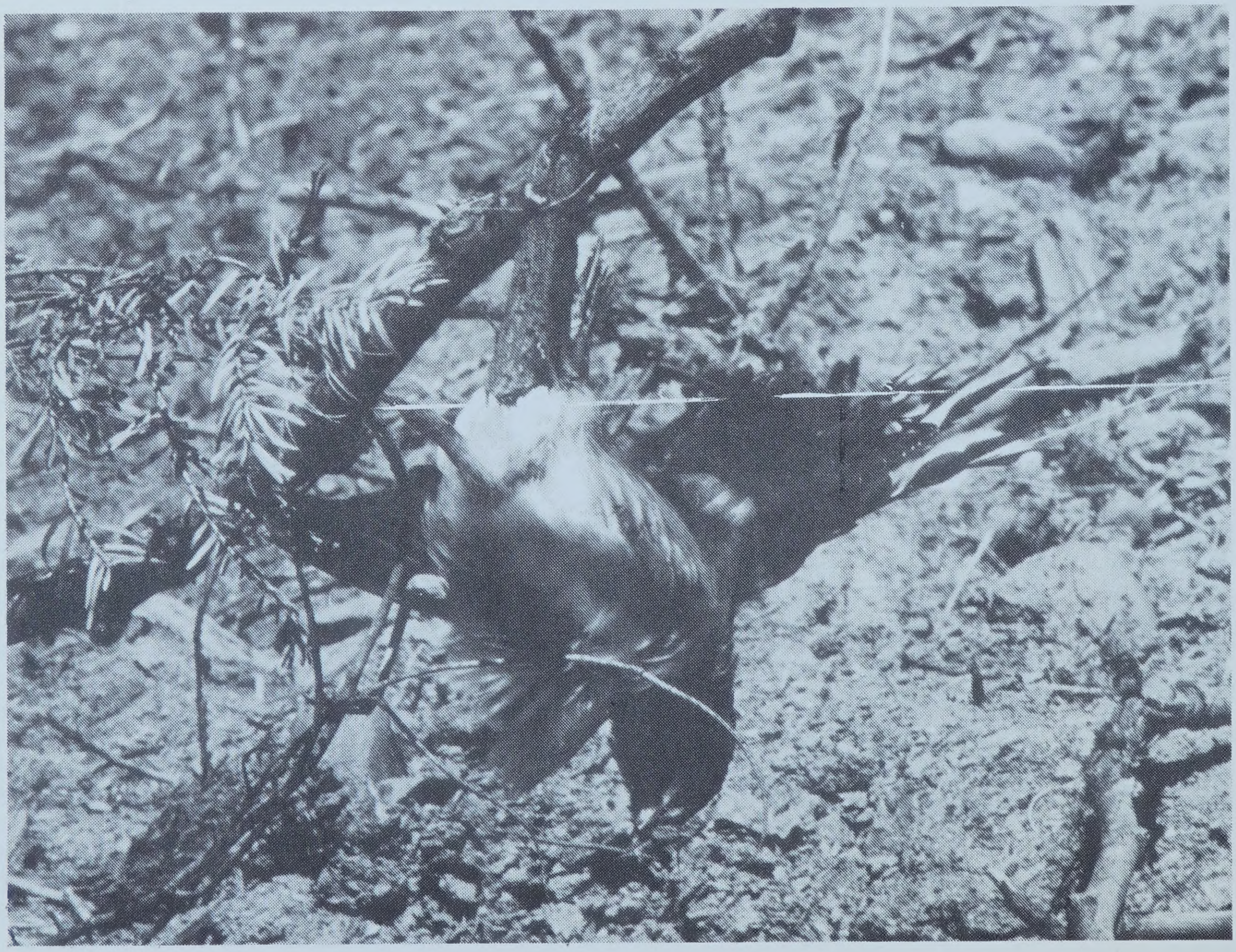
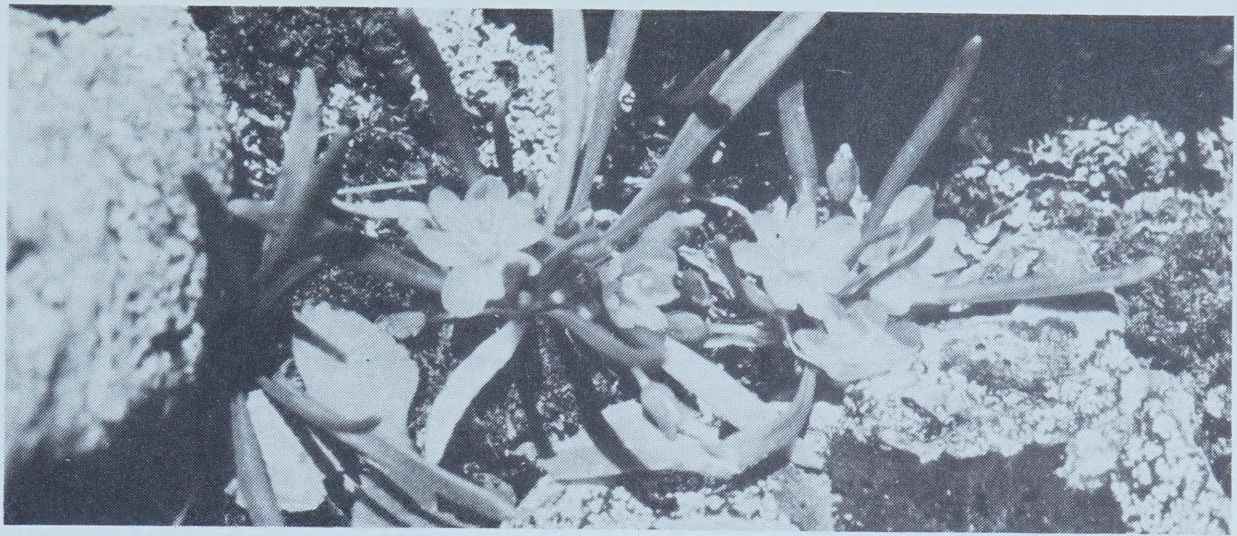
Author's Address:
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.

Gray Jay entangled in polyester thread. (Photo: I.G.W. Corns)





Pygmy Bitterroot (Lewisia pygmaea), Plateau Mountain.
(Photo: T.M. Dolman)

Range Extension of Pygmy Bitterroot in Alberta

Teresa M. Dolman and Wm. H. Sharp

The Pygmy or Dwarf Bitterroot (Lewisia pygmaea) is a diminutive, yet attractive flowering plant found on gravelly, rocky slopes to above timberline from the southern Yukon, through British Columbia, and southwestern Alberta to southern California and New Mexico (Scoggan 1978). Generally less than 8 cm tall, it bears 1-cm wide pink to white blossoms and has distinctive fleshy leaves which resemble a tuft of pine needles. In Alberta it has so far been found only at three localities within Waterton Lakes National Park (Kuijt 1982), and thus it is included in Packer and Bradley's (1984) Checklist of the Rare Vascular Plants in Alberta. (For their purposes, a "rare" species is one that has a small population within the province and is known from five or fewer localities.)

While on a Bird Atlassing trip to Plateau Mountain west of Nanton on July 20, 1988, we discovered a group of about ten Pygmy Bitterroot plants within a 50-m radius at the top of the mountain. Photographs were obtained. At approximately 2440 m, the top of Plateau Mountain is in the alpine tundra zone. The latitude (50 15'N) places it about 115 km north of Waterton Lakes National Park. Although there are producing gas wells atop Plateau Mountain, and the plants were not within Plateau Mountain Natural Area, vehicular access of the road which leads to the top is restricted by a locked gate, and it is to be hoped that this population of the Pygmy Bitterroot will remain undisturbed.

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Authors' Address:
Department of Biological Sciences, University of Lethbridge, Lethbridge, Alberta T1K 3M4.

F.A.N. NEWS

Mountain Bluebird Trails Conservation Group Conference

The Mountain Bluebird Trails Conservation Group began as an informal get together between two bluebird trail operators, Duncan Mackintosh of Lethbridge, Alberta and Art Aylesworth of Ronan, Montana who met in 1979. On Sept. 17, 1980 they set up Mountain Bluebird Trails. This was developed into an annual conference in 1984. Today it includes bluebirders from southern Alberta, Montana, Idaho, and one from Reno, Nevada (the daughter of one of the Idaho operators). Over 100 were registered. It included a full day of presentations, a short business meeting, a banquet with two speakers, and a Sunday morning field trip to bluebird trails in the Castle River area.

Presentations were divided between bluebird and other wildlife topics. Bluebird talks were:

1. An excellent slide show by Ray Harris of Calgary on his bluebird trail near his weekend retreat at the south end of Porcupine Hills.
2. An audio-visual on cavity-nesting birds and an associated educational kit presented by Myrna Pearman and Mike O'Brien, and financed by Ellis Bird Farm. The educational kit includes a 30 page teacher's manual plus an independent student guide, and other resource materials. It is geared to grade 5 and 6 students and is available at provincial school communication centres for use by teachers.
3. Art Aylesworth of Ronan, Montana who has both Western and Mountain Bluebirds, finds that Western Bluebirds displace the Mountain Bluebirds in the valleys in his area.
4. Don Stiles and George Loades of Calgary gave a brief presentation on how they handle bluebird trails in their area. For details call Don at 271-4689 or George at 281-8888.
5. Donna Hagerman of Reno, Nevada told of a scientific study in her area where she had set up paired boxes with 3.8 cm and 4.0 cm holes. Last year (1987), 72% of the Mountain Bluebirds preferred 4.0 cm holes. This year (1988) it was 85%.

Donna has a greater variety of species in her nests with the following being found in addition to the usual Tree Swallows and Mountain Bluebirds: Mountain Chickadee, Common Titmouse, White-breasted Nuthatch, Bewick's Wren, and Ash-throated Flycatcher.

6. Dennis Flath, non-game coordinator for the Montana state government, outlined a 1989 Centennial Project for Montana to complete a bluebird trail across the state. They are trying for 5 boxes for every 2 km. Volunteers have already signed up for about 3/4 of the trail. They expect to have all three species of bluebirds. Mountain Bluebirds will be common. Western Bluebirds have been known to breed as far east as Augusta, Montana. Eastern Bluebirds are scarce, but have been seen nesting as far west as Circle, Montana.
7. Tom Matsko, of Great Falls gave a brief presentation on mouse problems on bluebird trails.

Interspersed with the above talks were a number of non-bluebird topics including:

Lorne Fitch, Buck for Wildlife - Southern Alberta Habitat Development Program.

Colin Weir - Raptor Identification.

A Ducks Unlimited film on their Greenwing program, which teaches teenagers conservation and allows them to help with duck banding.

The evening program featured two speakers:

1. Miles Scott-Brown of the World

Wildlife Fund who outlined their Prairie Conservation Action Plan in western Canada.

Some objectives of the Plan: to preserve one sample of each of the 5 ecoregions, e.g., Grasslands National Park; to restore, e.g., Tall Grass Prairie; to recover endangered species (Swift Fox, Burrowing Owl, Loggerhead Shrike, Mountain Plover); to prevent species from becoming rare, endangered or threatened.

2. Alfred Perry of Boise, Idaho who gave an interesting slide show of his bluebird trail on the sagebrush plateau region of Idaho.

One theme which appeared in several of the bluebird trail speaker's talks was "bigness." Art Aylesworth of Montana suggests 14 cm x 14 cm floor size on boxes 23 x 25 cm deep on the front would allow for larger clutches, rather than 13 cm x 13 cm which is currently common. George Loades of Calgary agrees with this. He now makes his boxes 13 cm x 18 cm floor size. This allows the nest in one end of the box and allows George to place the young in the other end of the box after banding.

Alfred Perry of Idaho suggests a hole size of 4.1 cm rather than the currently used 4.0 cm, to allow for his "big" Mountain Bluebirds. However, he does not have a Starling problem and can get away with this, whereas most others could not.

Further information on starting and maintaining a bluebird trail in southern Alberta can be obtained by contacting Duncan Mackintosh at 327-5466. Mailing address is 1831 - 20 Avenue S. Lethbridge T1K 1C3.

The 1989 conference will be held at Plains in western Montana where both Mountain and Western Bluebirds are expected. This will also be the official North American Bluebird Society Conference (which meets annually somewhere in the U.S.A. or Canada).

Don Stiles

C.N.F. Annual Conference

"Native Northerners have the right to hunt and trap when, where and how much they need to," stated Jim Bourque, NWT Deputy Minister for Renewable Resources. After three days of intense discussion, the participants agreed.

It was not an easy decision, though. Most of us only reluctantly support hunting, and have deep-seated mistrust of the apparently unscientific management. But speaking with natives, watching films of the activities, and seeing the northern economy and lifestyle, all combined to change our minds.

Ken East, Superintendent of Wood Buffalo National Park, summarized the wildlife issues, from a park perspective. He reminded us that the north is not an uninhabited, barren land. Instead, its low productivity limits the number of people able to live there. The land was, and is at its carrying capacity.

Good management of the resources requires settlement of native land claims. The process drags on because of fundamental differences between how natives and whites view the land. The native belief in stewardship, not ownership, conflicts with the whole concept of "land claim."

"In spite of the difficulties," Mr. East reminded us, "there are great advantages for both groups to reach a settlement." Each will gain access to the other's vast store of information. Clear objectives can be created for the land, a decision-making process implemented, and the management structure simplified. Natives will be responsible for the wildlife that feeds them. Southerners will see a natural ecosystemm, including man, which exists in few other places.

Stan Njootli, from Old Crow, spoke quietly but with feeling about the native management process. Consensus, not authority, determine the action to be taken. Decisions result from countless conversations over a long time, and are always local. Mr. Njootli did feel that modern biologists would give a different perspective, and would make a strong addition to the management team.

The spring waterfowl hunt has produced the greatest controversy, but highlights how little we know of northern conditions. How arrogant it is for southern hunters to complain about spring hunting when the birds leave the north before the "legal" season begins. Northerners are expected to protect the breeding birds so southerners can shoot the geese later.

For people of the Mackenzie Valley, the fall is a time of plenty. Caribou and char can both be taken easily; spring is when supplies have dwindled and fresh meat is needed. Winter food consists of a daily bowl of caribou stew, served frozen on alternate days to conserve fuel. Fresh goose offers a real treat!

From a practical point of view, the spring hunt is going on as usual. Legalizing it will not reduce the southerner's bag limit at all. It will, however, lift a burden of guilt from the natives, and allow them to work openly to keep the goose populations healthy.

I was very impressed with how outgoing the people of Yellowknife were. Strangers started conversations, and made real efforts to help out. The whole community is outdoors-oriented. About one car in ten had a canoe or rack on it. Most people, including whites, have freezers of caribou and other wild meat. I must admit that the gardens were pitiful. This just emphasizes how dependent the whole region is on animals for their survival.

In the stores, wildlife also played a prominent role. Clothes, art, and photographs all featured the unique northern species.

Perhaps my best memory comes from the boisterous barbecue, where we sampled caribou, arctic char, and even musk-ox. Surrounded by noise, a northerner quietly sliced jerky from a full set of caribou ribs with a penknife. He was proud that he could provide this food, but surprised that we would be interested in it.

Each speaker agreed that living on the land is not easy, but it is possible. Trapping, which is considered traditional after 200 years, is a renewable cash crop. Food animals still support most northerners. What they need most is the blessing of the rest of the country.

Rob Gardner

F.A.N. Fall Meeting

Forebodings of a miserable weekend evaporated quickly for those brave Directors and friends who ventured off to Jasper for the F.A.N. Fall Meeting on September 17-18. I believe this is the first time that F.A.N. has held a meeting in Jasper. Due to an unfortunate error in the program outline a couple of people almost missed the best part of the weekend--the Saturday field trip. Under the expert guidance of Ben Gadd, author of Handbook of the Canadian Rockies, a group of about 16 thoroughly enjoyed a six-hour tour of Maligne Canyon, Medicine Lake, and Maligne Lake. Ben's familiarity with the park added immeasurably to the enjoyment the group gained from the trip. Waterfowl and passerines did not overwhelm us with their numbers, but it did appear that the crows, magpies, and ravens were having their annual convention in the park that weekend! Maligne Canyon seems to be a popular nesting spot for ravens judging by the number of nests along the canyon walls. A water ouzel, better known as the American Dipper, captured the group's attention at one point along the canyon trail. How and where the water from Medicine Lake drains through the rock formations into the Maligne River and how the waterflow patterns change with the seasons were part of the enlightening tale that Ben wove for us. The morning may have started out dull, but within two hours the sun was shining and there was hardly a cloud in the sky. The rest of the weekend was sunny and warm with some high cloud drifting in on Sunday afternoon. The fall color was not yet at its peak, but the yellows and oranges of the trees and shrubs on some of the mountain slopes, along with a fresh dusting of snow and lots of sunshine, made for a rather photogenic weekend. The group stopped for lunch at Maligne Lake enjoying a good view of the lake and surrounding mountains all the while. After lunch the group trouped off for a walk along the Mary Schaefer Trail near the lake. At one point along the trail a soon-to-be conscience-stricken naturalist resorted to feeding the resident Gray Jays granola bars so that the other conscienceless naturalists could take pictures of them.

The Saturday evening program featured three speakers discussing "Marketing Wilderness." One speaker, from the Marmot Basin ski area, represented the "commercial" side that more development should be allowed. The second speaker took the view that enough is enough, the parks are already overused, leaving the Parks Canada representative to take more or less the middle ground. The discussion was lively and valid points were brought up on all sides. It was clear after all was said and done that Parks Canada is in a difficult position trying to steer a course between the "exploiters" and the "preservationists."

On Sunday morning, while the Directors sat freezing in the curling lounge at the Jasper Activity Centre (honestly, it was warmer outside!), the few remaining souls headed off for field trips. With the meetings over there was time for those who wished to dawdle on the way home to tour the townsite, visit Pyramid Lake, or try their hand, or should I say vehicle, at negotiating the Celestine Fire Road.

For those interested in larger wildlife, a fine bull elk had taken up residence with his harem along the railway tracks a few kilometres north of the townsite. You could not miss the animals because of the major traffic jam created by all the eager shutterbugs. A couple of white-tailed deer and about a half dozen ewes and young bighorn sheep rounded out the large mammal count.

Special thanks to Kevin Van Tighem for organizing a productive meeting.

J. Derek Johnson

Pyramid Range, Jasper National Park. (Photo: J.D. Johnson)

Columbian Ground Squirrel. (Photo: P.S. Debnam)

Federal-Provincial Wildlife Conference

Each year, the Directors and Deputy Ministers responsible for wildlife gather to discuss new trends in their field. As the name suggests, all provinces and territories, as well as the Canadian Wildlife Service, are represented.

The main topic was the increasing importance of non-consumptive users of wildlife. Coupled with this was a review of the Guidelines for Wildlife Policy in Canada. This document recommends to Canadian wildlife agencies what subjects should be included in their Wildlife Acts.

In the past, our organization has been among a small group of non-government organizations invited to take part in the discussions. This year's format allowed a wide range of groups to attend. This resulted in more interesting discussion, but did not result in any decisions being made.

What does the future hold for our wildlife agencies? Some were doubtful about their survival. Others were anxiously exploring new directions. The reason for the concern: hunters are declining in numbers. Speaker after speaker documented this, while showing the numbers of birdwatchers and tree-huggers are increasing rapidly.

Several interesting reasons for this merit study. Habitat destruction and posting means less wildlife to hunt. This, in turn, overcrowds the remaining habitat, in spite of fewer hunters. Hunting has highest participation from men in their late twenties. Fewer people each year are in that age bracket. Perhaps the most basic reason is the urbanization of our society. As we become more isolated from the essentials of life, we are less eager to hunt our own food.

Many of the Directors seemed ready to give non-game animals more attention. However, this cannot come at the expense of the game species. Their management is already reduced to the minimum, with limited biological research and only token enforcement. We, the non-consumptive users, were told to apply pressure to the government for more funds. Almost as important, we were asked for possible programs. These people do not know what a tree-hugger wants from the Fish & Wildlife Division. Do we?

Monte Hummel, of World Wildlife Fund Canada, had an answer. Presently, habitat decreases incrementally. Each bit is minor, but together, the effect is devastating. Why not start an incremental increase in habitat? Each industry should be required to leave the habitat in slightly better condition than it was before. Sewage would be cleaner than intake; loggers would reforest more land than they clear.

A full day was devoted to reviewing the Guidelines for Wildlife Policy. The groups had only vague objectives, and the leaders did not run the session effectively. This resulted in a mish-mash of ideas for a committee to sort out later. The general consensus was that the existing Policies were generally adequate, but they were not interpreted to include non-game species.

On a personal level, I found the variety of opinions fascinating. Falconers, trappers and animal-rights activists all stated their opinions forcefully. And, I believe, all found the other ideas had some merit. Face to face conversation can solve more problems than any petition or Royal Commission.

I should note that the most popular field trip was to Port Renfrew, where we waded through the surf. Sea anemones are the ultimate in non-game animals, but they attracted a lot of attention anyway.

The conference achieved its objective of exploring new trends in wildlife management. Decision-makers found support for non-game species is increasing rapidly. These people can give strong political support. Naturalists, for their part, were given a strong challenge: to present positive conservation programs to the agencies.

Next year's conference is in Prince Edward Island. Contact me for details.

Rob Gardner

From the Editor

How many times have I cried wolf now? Well, this time it's for real! This is definitely, maybe, possibly my last issue as Editor of the Alberta Naturalist. I would like to introduce Anna Robertson of Red Deer as the new Editor, beginning with Volume 19. I wish her well in her new duties and I hope she gets the support of the membership to make the job as smooth as possible.

Looking back on the past five years as Editor, if I had it to do all over again, would I? Probably not. Do I regret having taken the job in the first place? Definitely not, inspite of all the problems, the latest of which seems to be our printer's overzealous use of ink in recent issues when printing up the photographs.

What has been different about this past year? Well, for one thing we hired a new Executive Assistant, Ann Stefura, in February. An organization such as F.A.N. cannot function well in this day and age without an office and at least one "permanent" staff member. Ann's help, especially in preparing the A.N., has been most valuable and appreciated, and has helped me maintain my sanity to the point where I no longer threaten to jump out a basement window. While I'm on the topic of thank yous, I would again like to extend my appreciation to the rest of the "crew" for their continuing efforts in preparing and distributing the A.N. and keeping track of the membership.

For the first time in my five years as Editor there was actually more than enough material to publish for two issues in a row! This happened with the first two issues of Volume 18, but reality reasserted itself with the last two issues and a little "creative padding" was necessary. It would seem that the A.N. continues on at its own pace regardless of whether the Editor is diligent or negligent. I bared some of my frustrations in a tranquilized editorial last year and I don't think repeating them again would serve any useful purpose.

Since shortly after becoming Editor, I have been concerned by the decrease in what I would call "What I saw while walking my dog" articles. Whether people are too busy to report such "trivia", or they feel put off by what they perceive to be an A.N. too "scientific" to accept such observations, I do not know. Although it will be up to the new Editor to decide if the idea has merit, I would like to suggest the (re)institution of a "Members' Page" in the A.N. where individual members can report on their observations, or anything else that particularly interests them, without having to worry about format or scientific merit.

These days there are so many organizations with overlapping interests and so many activities vying for people's time that it is getting more difficult to find "willing" conscripts to do anything, let alone maintain a high standard. However, the A.N. is a survivor of the times and I expect to be reading it many volumes into the future.

J. Derek Johnson

Letter to the Editor

When you retyped our paper The Greater Edmonton Owl Prowl for inclusion in your publication some of the parts were mixed up. The following paragraph refers to the Boreal Owl and not to the Saw-whet Owl.

These owls have been reported to respond to taped calls, however, they do not always respond with the "winnowing" call we were using on the tapes and frequently approach the caller without making a sound (M.W. O'Connell 1987). Because most of the prowlers are not familiar with these other vocalizations and much of the calling was on nights where there was little or no moon, many of these owls may have been missed.

Barbara and James Beck

Editor's Note: The manuscript started out alright; the transposition occurred during the cut and paste operation of doing the layout and the mistake was not caught before the issue went to printing. I offer my apologies to the authors for any inconvenience this oversight may have caused them.

CLUB NEWS

Lethbridge Naturalists' Society

The Lethbridge Naturalists' Society has recently published an update of their publication entitled "LETHBRIDGE RIVER VALLEY NATURE FIELD GUIDE." The booklet includes chapters on human history of the river bottom, landforms of the Oldman River Valley, mammals, birds, amphibians, and reptiles. Also included are checklists of flowering plants, mammals, birds, amphibians, and reptiles. The booklet is 26 pages long, and includes a map of the parks situated in the river valley within the City of Lethbridge. Copies of the Field Guide may be obtained free of charge by writing to the Lethbridge Naturalists' Society, Box 1691, Lethbridge, Alberta T1K 4K4.

The Lethbridge Naturalists' Society got its fall season underway with the annual potluck picnic, held at the Lethbridge Agriculture Centre picnic site September 11. After the usual delicious meal and comraderie, several members put their fall warbler identification skills to the test, as numerous examples of these little teasers were flitting about in the shrubs and trees of the picnic grounds. Also present were abundant robins and a few other species of passerines, a few raptors flew over, gulls were numerous, and several large flocks of mixed species of blackbirds flew over. After a wet and blustery weekend, this sunshiny Sunday evening was very enjoyable.

The annual meeting was held in October with the installation of the new executive for the coming year. It was also members night, where club members showed examples of their own nature slides. The new president is Dr. Bob Hall, the past president is Bill Brown, the vice-president is Graeme Greenlee, the secretary is Doug Walker, the treasurer is Frank Russell, and the directors are Harold Hughes, Doris Rhodes, and Rita Goughnour. Positions still to be filled are one more director, and corresponding secretary. Important but non-executive positions are the newsletter editor, Teresa Dolman, and the F.A.N. directors, Colin Weir and Graeme Greenlee.

The speaker at the November 11th meeting was Teresa Dolman, of the University of Lethbridge, discussing "animal signs."

The December program consisted of the annual Lethbridge and Waterton Lakes National Park Christmas Bird Counts.

January 13, 1989, Gaylen Armstrong of the Alberta Fish and Wildlife Division in Lethbridge will speak on sage grouse.

February 10, Dr. Bob Hall, president of the Lethbridge Naturalists' Society, will show slides of a recent trip to the Galapagos Islands.

March 10, Keith McDougall of Waterton National Park, will speak on wildlife of Malawi and Zambia.

April 14, Frank DeBoon, a former ranger at Writing-on-Stone Provincial Park and now residing in Fernie, B.C., will speak on wildlife photography.

Meetings are held at 7:30 p.m. on the second Friday of the month in room 1028, Cousins Building, Lethbridge Community College, 3000-College Drive South.

Graeme Greenlee

NOTES AND NEWS

Canadian Wildlife Ministers Sign Agreement to Protect Endangered Species

Federal Environment Minister Tom McMillan and provincial and territorial ministers responsible for wildlife, signed an agreement on September 27 for the Recovery of Nationally Endangered Wildlife (RENEW) at a federal-provincial wildlife ministers meeting in Saskatoon.

"The agreement constitutes the first national master plan for the protection of threatened or endangered wildlife species in Canada," said Mr. McMillan. "Its purpose is to protect endangered species from extinction and to prevent other species from becoming endangered."

Some 165 plant and animal

species are on Canada's National Endangered Species List, but rehabilitation programs have been established for only about a quarter of them.

The RENEW program was developed by Environment Canada, provincial and territorial wildlife governments, helped by several non-government environmental organizations. It will be administered jointly by these agencies. Priority will be assigned to each threatened or endangered species, based on the seriousness of its plight and its potential for recovery.

A team composed of the best experts available for each designated species will then guide its recovery. Each team will prepare and carry out a comprehensive recovery plan that will identify:

- the problems faced by the species concerned,
- the management techniques to solve those problems,
- and the increase in population size required to bring the species out of danger.

"The RENEW process will involve all sectors of society and individual citizens in rehabilitating endangered species," said Mr. McMillan. "The plight of many endangered species can be traced directly to human activities. By the same token, society must relieve the pressure it puts on species at risk."

Seeing Things

From time to time I ask myself, from my perspective as an amateur naturalist, what I would want for this world of ours. And the best answer is that I would wish for a better realization on the part of its most intelligent species, Homo sapiens, of its rightful place in the universal order. Hubris is a dangerous trait and there is no evidence to suggest that man possesses the ability, let alone the divine right, to shape the world to his image.

The irremissible logic of nature requires a perfect unison, and intricate balance, among all living things. When man assumes that he can detach himself with impunity from the other spcies and pursue actions without reference to his fellow creatures, he threatens that unison and, in doing so, jeopardizes his own survival. Every species that we allow to disappear, through benign neglect or thoughtless action, inevitably hastens our own extinction.

The more we learn of nature, the more we appreciate that elementary truth. The more each of us knows of birds, of flowers, of trees, of any other organism, the better informed we become of our own species and of what we must do to ensure our survival. To acquire that art of seeing things is to acquire the secret of knowing ourselves.

Wynne Thomas. Seeing Things. The special rewards of being nature's friend. The Review. Imperial Oil Ltd. Fall 1987.

ANNOUNCEMENTS

Douglas H. Pimlott Award

In Yellowknife N.W.T. this July, Stuart and Mary Houston were honoured by the Canadian Nature Federation, as recipients of the 1988 Douglas H. Pimlott Award.

A carved marble musk ox bears this inscription: "Presented to Stuart and Mary Houston in recognition of their outstanding life-long dedication to conservation and natural history."

Douglas H. Pimlott was a founding director of the C.N.F., and served as its president in 1972 and 1973. The award created in his name is given annually during the C.N.F. conference.

1989 Annual Meeting, Northwest Section, The Wildlife Society

The 1989 Annual Meeting of the Northwest Section of The Wildlife Society will be held 11 - 13 April at the Banff Park Lodge, Banff, Alberta. Registration and a social/mixer get together will commence on the evening of the 10th. This will be followed by 3 days of invited and contributed sessions, field trips, and fantastic skiing and scenery.

The meeting theme is "Ungulate management trends." We will kick off the conference with a 1-day symposium, "Commercialization of Wildlife and the Evolution of Wildlife Management." Speakers confirmed include: Bob Hudson, Fred Gilbert, Val Geist, Chuck Meslow, Jim Teer, and Fred Bunnell. The symposium will consider the trend toward commercialization of wildlife as a symptom of pressure for change in North American wildlife management. Speakers will consider the history, evolution and goals of wildlife management in North America, consider the need to change the goals, and evaluate the available mechanisms, including commercialization, for achieving those goals. A final reaction to the proceedings will consider if and how wildlife managers must react, adapt or perish. The symposium is designed to stimulate and challenge wildlife managers to think about the problems and solutions facing them today and in the future.

A second symposium, "Collisions with wildlife along transportation corridors" is developing. Other featured speakers and areas include Stan Boutin on "Predator - Prey Models in Ungulate Management", and Bill Wishart who will review Alberta's policy on trapping, transplanting, and treating (lungworms) Alberta's bighorns.

The Banff Park Lodge (222 Lynx Street, Bx. 2200, Banff. Ph. (403) 762-3553 is located in downtown Banff. Bring your family and complement the meeting with the many and varied outdoor activities Banff National Park has to offer. Rooms will be $65.00 CDN/day single or double occupancy; additional person $10.00/day. For more information, contact Bill Glasgow, AB Fish and Wildlife Division, Main Floor, North Tower, Petroleum Plaza, 9945 - 108 St., Edmonton AB T5K 2C9 (Ph. 403 427-4192).

Prairie Conservation and Endangered Species Workshop

Prairies that once teemed with diversity and abundance are now threatened with a spasm of extinctions unequalled in history. On January 27, 28, and 29, 1989, the Saskatchewan Natural History Society together with the Canadian Plains Research Center will host a workshop in Prairie Conservation and Endangered Species. The three day workshop to be held at the Saskatchewan Museum of Natural History in Regina has the theme: Agriculture and Wildlife; Partners in Conservation.

The workshop will feature special discussions on the World Conservation Strategy, Soil and Water Conservation, Wildlife Tourism, Prairie Drought, North American Waterfowl Management Plan, Public Education and the implementation of the Prairie Conservation Action Plan, a project of World Wildlife Fund Canada. There will be presentations on the status of rare, threatened and endangered species in the prairie and aspen parkland ecoregions of Canada. There will also be working sessions on prairie shorebirds and the International Shorebird Reserves Program, and the conservation of grassland sparrows.

Workshop attendants will have the opportunity to participate in working sessions to discuss the status and conservation needs of at least 20 species and to search for socioeconomic solutions to the integration of economy and environment linkages. A poster session will also be held for anyone wishing to present information in this manner. Live endangered species will be on display, along with a host of other exhibits on prairie wildlife, habitat and conservation. The proceedings of the workshop are to be published.

For registration information contact Prairie Conservation and Endangered Species Workshop, Saskatchewan Natural History Society, Box 4348, Regina, Saskatchewan, S4P 3W6, or phone Susan Henry at 306-780-9273. Persons wishing to contribute papers, posters or chair a session should contact Dr. Geoff Holroyd, Canadian Wildlife Service, Room 210, 4999-98 Ave., Edmonton, AB, T6B 2X3, or phone 403-468-8922.

Flowing to the Future

A major conference on Alberta's rivers will be held from May 11 to 13, 1989 at the UNIVERSITY OF CALGARY. The theme of the Flowing to the Future conference is: "A river is more than just water." To date, the conference has been endorsed by 23 groups and organizations across the province.

In Alberta, rivers have traditionally been viewed primarily as water resources. In fact, however, running water is the heart of complex ecosystems that sustain trout, mayflies, suckers, canoeists, swallows, floodplains, forests and the very landscapes that define our province. Humans have depended on and formed attachments to Alberta's rivers for millenia. Many Albertans are coming to realize that to view a river as a plumbing system is to run the risk of over-simplifying complex issues and relationships, and may lead to decisions that will irreversibly affect the quality of life in our province for centuries to come.

One of the main objectives of the conference is to bring together both experts and ordinary Albertans, to give shape and substance to the view of our rivers as intricate systems of life that have real cultural, ecological and economic value - and to establish a dialogue that will offer new perspectives on how to ensure that Alberta's legacy of living rivers does, indeed, flow on into the future of our province.

KEYNOTE SPEAKERS

The selection of featured speakers will include individuals who will be of special interest to each of the major groups of river users. Bob Scammell, one of Alberta's best-known outdoor writers and anglers has agreed to speak, as has Tim Palmer, author of the 1986 Endangered Rivers and the Conservation Movement.

POSTER SESSIONS

Display space will be provided free to non-profit groups, and on a rental basis for promotional displays by commercial groups. Poster sessions may include State of the River displays on rivers not listed in the program.

STATE OF THE RIVER REPORTS

Compiled by individual Albertans working with members of their local communities and drawing from government reports and other sources of information, these will describe the physical environment, management history, current uses and values, and future prospects of selected Alberta rivers. Four of these reports will form the basis for audience workshops on management issues and alternatives. The Mountain Equipment Co-op's financial support of this session is gratefully acknowledged.

All across Alberta, State of the River Report compilers are now at work assembling information on rivers as diverse as the Milk, the Bow, the North Raven, the Brazeau, the Little Smoky and the Slave. In six months time, with slide shows, music, displays and formal presentations, these Albertans will join one another to present Alberta's first grassroots review of our rivers - past, present and future. Experts on fisheries, river recreation, economics, and water management will help to put these reviews in perspective and discuss strategies and alternatives to help ensure that Alberta's legacy of living rivers continues to flow into our future.

Other speakers at the conference will present a wide range of perspectives on rivers - in Alberta, elsewhere in Canada, and internationally.

Besides the Mountain Equipment Co-op, other corporate sponsors include the Edmonton Natural History Club, Trout Unlimited of Canada, Alberta Wilderness Association and, of course, the University of Calgary Faculty of Continuing Education which is hosting the conference. The conference logo is being contributed by David Soltess, a Calgary-based graphic artist.

As a complementary initiative, the Federation of Alberta Naturalists is sponsoring a province-wide poster/essay contest for elementary school children this winter. The contest theme - "A river is more than water" - reflects the theme of the Flowing to the Future conference, and winners will be announced at the conference.

For more information: Kevin Van Tighem, Co-Chairperson, Flowing to the Future, Box 2537, Jasper, Alberta T0E 1E0; or Tim Pyrch, Co-Chairperson, Flowing to the Future, University of Calgary, Faculty of Continuing Education, Calgary, Alberta T2N 1N4.

"The Earth is one but the world is not. We all depend on one biosphere for sustaining our lives. Yet each community, each country, strives for survival and prosperity with little regard for its impact on others."
The "Brundtland" Report, p.27.

Sculpins...cont. from page 127

they form part of diverse, healthy fish communities. Unfortunately, the Red Deer River population, from which much of this life history information was derived, has declined severely since the river was impounded by the Dickson Dam.

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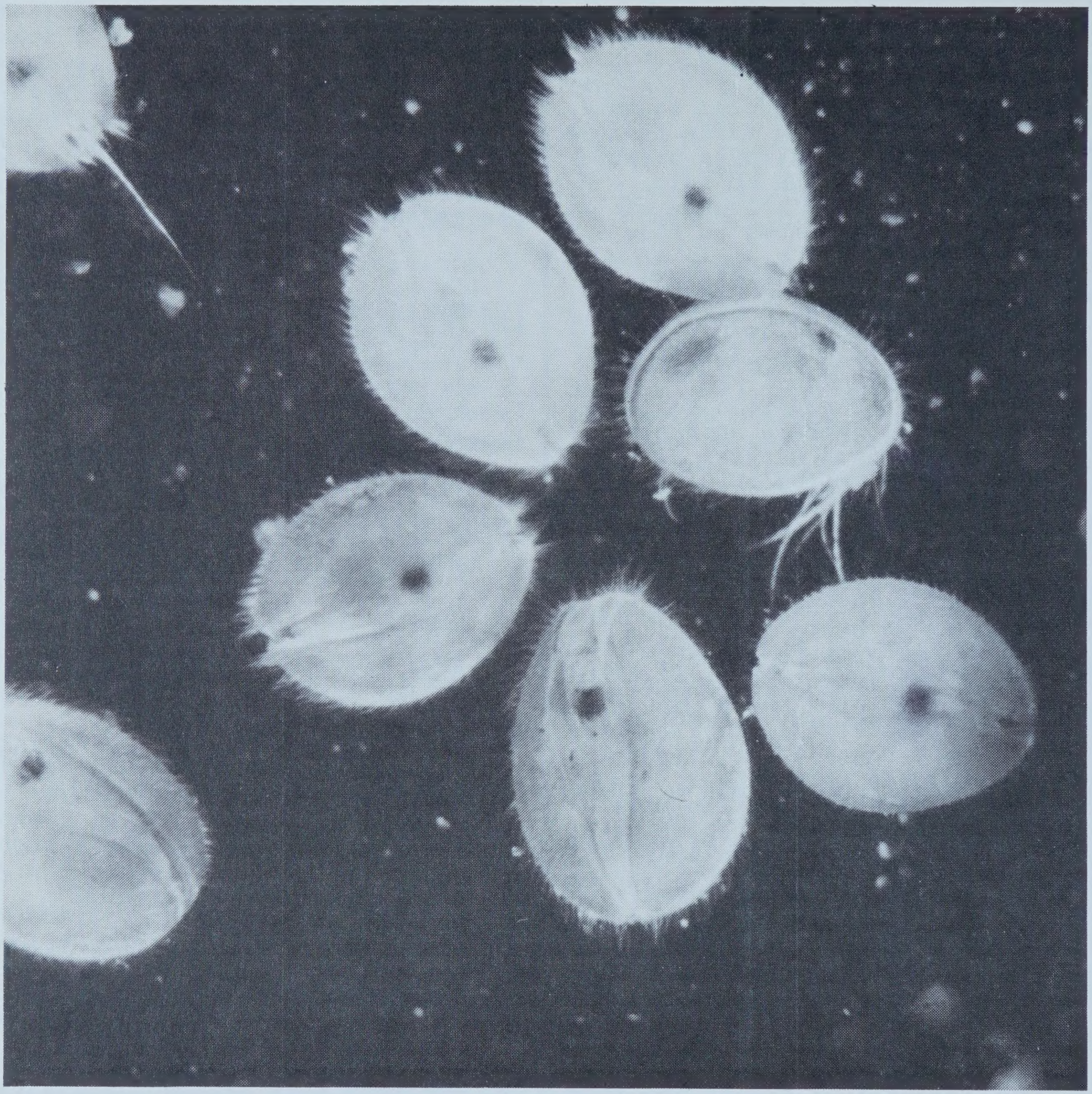
Author's Address:
Zoology Museum, Dept. of Zoology, University of Alberta, Edmonton, Alberta T6G 2E9.



SEED SHRIMPS are common and often abundant in most aquatic habitats. They are usually found near the bottom or among thick vegetation. Most range in size from 1 to 3 mm. Some are active swimmers; others creep along the bottom or other substrates. All have a hinged two-part carapace from which the swimming and feeding appendages protrude. Their food consists mainly of bacteria, algae, and fine detritus. The carapace is opaque and can be closed tightly so the internal structures cannot be seen without dissection. Reproduction is sexual. Eggs hatch into larvae which go through eight molts before becoming adults.

(Photo and caption by Tom Branch.)

NATURALISTS BOOKSHELF

Finding Birds in Elk Island National Park

Judith Cornish. 1988. Illustrations by Deirdre Griffiths. Friends of Elk Island Society, Fort Saskatchewan, Alberta. 80 pp. $7.95 soft cover.

For those of us interested in finding and enjoying birds in their natural habitats there are all sorts of books available, most of which list and describe the distinguishing characteristics of the birds frequenting a specific region, sometimes including references to their preferred habitat. The approach taken by Judith Cornish is a more holistic one, describing a particular habitat as including certain birds at certain times of the year. While not a field guide, Finding Birds is a good aid for forming one's expectations of the area.

After a brief description of the Park's history, the author begins the main body of the work. She progresses through each of the major habitat types, describing the environment and its avian inhabitants throughout the year. Some of the birds are merely listed as present in the habitat. Others are elaborated on with anecdotal descriptions of habits or physical attributes gleaned from the author's personal experience or the extensive park records. This section is practical and straightforward, but perhaps somewhat superficial for an experienced birdwatcher. Included in the book is a map of the park illustrating the trails, as well as a checklist of all the birds known to be present in the Park, the habitats they frequent, their typical arrival and departure dates, their abundance, and their status as park residents.

Used in conjunction with a good field guide, this book would be a valuable aid to novice birdwatchers or those only casually acquainted with the ecology of the Park. The map and the checklist are useful to any visitor to the Park. The author also provides a summary of resources available in the park to those who wish to pursue the topic more exhaustively.

Robyn Shortt

Mosses, Lichens and Ferns of Northwest North America

Dale H. Vitt, Janet E. Marsh, and Robin B. Bovey. 1988. Lone Pine Publishing, Edmonton, Alberta. 296 pp. $24.95 soft cover.

This is the first popular guide to mosses, lichens and ferns of northwestern North America. Included in the book are 170 mosses, 20 liverworts, 156 lichens and 28 ferns and allies, about 15% of the species found within that area. The area covered includes the provinces of British Columbia, Alberta, and Saskatchewan, the northwestern Northwest Territories, and the states of Alaska, Washington, Oregon, Idaho, northern Wyoming, and Montana.

The book was designed for the use of amateurs and includes a habitat identification scheme, range maps, and a colour-coded system to aid in the identification of these little known creatures. For each plant there is a photograph as well as one paragraph of details about it. The range maps have symbols to indicate which of the seven broad vegetation types the plant is generally found in.

In general, the photographs are of good quality and some are absolutely stunning. A few, such as Andreaea rupestris, Atrichum undulatum, Mielichhoferia macrocarpa, Hypnum circinale, Cetraria tilesii, and Melanelia exasperatula are of poor quality and they are of little value as identification guides.

The book also contains an introduction, a discussion of the structure and biology of mosses, liverworts, lichens, and ferns and their allies, as well as additional literature, a glossary, and index to scientific and common names. It also contains systematic keys for the identification of each plant described.

The book is not totally free from errors. For example, Thomson is misspelled on page 14 as is Arctic in Figure 2, page 17.

The inclusion of ferns and their allies with the mosses and lichens seems a bit strange. Personally, I would have preferred more coverage of the latter since they are neglected in most field guides while information on ferns and their allies is common.

The addition of pen and ink sketches, particularly to demonstrate the leaf structure in the mosses, would have been a welcome complement to this useful publication.

Professionals and technicians who are interested in the use of lower plants for site classification and as monitors of pollution will certainly want a copy of this book. It will make an excellent gift for the bookshelf of many naturalists.

The authors and publisher are to be congratulated on a fine effort. Hopefully, their book will stimulate interest in a fascinating but much neglected group of plants and their surroundings.

George W. Scotter

SPITSBERGEN – SVALBARD

Freelance photographer Halle Flygare is again escorting a photography and natural history tour through the spectacular glaciated islands of Norway's Svalbard.

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Wood Warblers' World

Hal H. Harrison. 1984. Simon and Schuster, New York, New York. 334 pp. $19.95 (U.S.), hard cover.

As I recall, I found my first Yellow Warbler nest near the Delta Marsh in southern Manitoba where I studied this delightful species. This was the first of over 300 nests I was to examine during a study which provided me with an intimate glimpse into the life of a wood warbler.

Hal Harrison, in his book, Wood Warblers' World, gives the reader an insight into the lives of the 53 species of warblers which have nested in North America. This book is the culmination of the author's dream to write about warblers and illustrate them through photography. The diverse colours of these "butterflies of the bird world" are captured through excellent colour photographs taken by the author and others. There are also numerous black and white pictures of nests, habitats, and even a photograph of a Brown-headed Cowbird removing an egg from a Chestnut-sided Warbler's nest.

The warbler accounts have common descriptive elements including information on habitat, song, behaviour and range. Harrison draws on the experience of other naturalists and researchers to augment his own knowledge of warblers. In fact, over 250 references can be found in the bibliography, ranging in date from 1877 to the 1980's. Harrison also takes the time to explain the meaning of warbler's latin names and provides interesting insights into how names came to be assigned.

Warbler watching can have its humorous side. A blind which Harrison set up near a Hooded Warbler nest caught the attention of the Secret Service during World War II! On another occasion, Harrison informed two highway workers who were near a MacGillivray's Warbler nest, that he was counting rattlesnakes. Needless to say, the workers decided to depart leaving Harrison to the real work which he enjoys - photographing warblers.

From a Canadian viewpoint, the book is biased toward exploring an American Wood Warbler's World. The author does so by drawing on his own and other's experience in habitats of the United States. Although Canada does not have an abundance of warbler literature, Harrison listed an inordinately low number of publications pertaining to Canadian research on wood warblers.

Harrison, unfortunately, repeated portions of his text in captions under pictures. Repetition is good for learning but in a book like his where the accounts are relatively short, it would have made for more interesting reading if he would have added supplementary information.

Overall, I recommend this book to those individuals who appreciate warblers and to those who are curious as to what all the fuss is about over warblers.

J. Paul Goossen

A Field Guide to Alberta Berries

Olga Droppo. 1988. Illustrations by Hope Johnson LLD. Calgary Field Naturalists' Society, Calgary, Alberta. 224 pp. $9.50, coil binding.

For those avid berry pickers among us, here is a key to the non-cultivated "berry" producing plants of Alberta. The term berry is applied loosely allowing the author to include 106 species from 22 families of natives and garden escapees, edible and non-edible berries. This approach should allow for comparison and hopefully fewer mistakes in identification in the field or at home.

The keys to the berry-producing plants are very good, using vegetative features and fruit characteristics where possible. The keys are easy to follow for anyone familiar with simple botanical terms. For those with less experience, adequate pictured definitions are provided in the introduction and glossary.

Latin and common names (and synonyms for both) are used throughout the keys (and index) which lead you by page number to the illustrated descriptions. These are arranged alphabetically by Latin names. I am pleased at the author's handling of this matter; one of my pet peeves is the inexplicable tendency to ignore or down-play the use of Latin names. Each species description is generally on a separate page with the drawing on the facing page. This allows easy comparison between the two and plenty of room throughout for notes. A short but detailed description of the habit, fruit and flower is given for each species, often with habitat and distribution information provided.

Hope Johnson has provided wonderfully executed line drawings for each species in fruit. Occasionally a small habit sketch or fruit detail is included. Unfortunately, the drawings are not always illuminating, making it essential to read the description carefully. A case could be made for labelling the drawings important features. There is some lack of consistency in the quality of the drawings probably due to reduction or enlargement but rarely due to errors in accuracy.

Under the section on edibility for each species are quotes from a total of 19 other published sources. This list is a reasonable cross-section of popular works though it is by no means complete.

One would like to have seen this helpful publication humanized with the addition of personal opinions, judgements or experiences. For example, all eleven currant (Ribes) species are grouped together as "edible, but sometimes not very tasty." This hardly describes my own experience of the lusciousness of browsing on Gooseberries (R. inerme) while still having a bad taste in my mouth years after that day I ate one Skunk Currant (R. glandulosum) berry.

D.M. Fabijan

This publication is an ambitious Wildlife '87 project of the Calgary Field Naturalists' Society. C.F.N.S. has produced a number of publications dating back to the early 1970s. The topic on this occasion is a field guide to 106 species of plants found in Alberta that produce a fruit which is commonly referred to as a "berry." In the Introduction the intent of the book is outlined, a source given for scientific nomenclature, as well as illustrated definitions relating to different types of fruits. Following this is a Key to Plants Producing Berry-like Fruit: Growing in Alberta Without Cultivation. The main body of the book follows where written descriptions of berry-producing plants are given on the left hand page and line drawings of the plants on the right hand page. With the exception of the roses, all species mentioned in the text are illustrated. The plants are arranged alphabetically by genus. If the genus has more than one species, the genus description is followed by a key to species. The species descriptions then follow the species key in alphabetical order. Each plant description is followed by a section on edibility, extracted from a number of relevant references. At the end of the book is a Glossary, defining terms relative to leaves, stems, roots, fruits, and flowers, a Bibliography, and an Index where common names are listed in bold face type and scientific names in italics.

Overall, I was generally impressed with this publication. Considering it was produced by "non-professionals", it is a fine effort. The coil binding makes it handy as a field guide. The inclusion of a Warning Respecting Non-edible Plants at the beginning of the book is a good idea, especially when a number of the species included are potentially poisonous. I think the book gives a reasonably complete treatment of the berry-producing plants found in Alberta. The keys are relatively simple and generally adequate when dealing with fruiting material. There are, however, a few problems with some of the larger genera. For example, on p. 123 Ribes lacustre is mentioned in the second lead 'a', but it is not included in that section of the key (nor should it be). On the same page, leaf shape is mentioned in first lead 'f', but not anywhere under second lead 'f'. Such oversights are minor and do not detract from the overall usefulness of the book. The species descriptions are generally accurate and clearly show a thoughtful sifting and melding of available information from a number of the selected references. I particularly liked the explanation of technical terms in the descriptions themselves. This should save the novice from having to continually flip back and forth to the Glossary. I found the organization of the Bibliography a bit strange. There seems to be no particular rhyme or reason for the order in which the references are listed. This is not serious in a short list, but in a longer list it would be harder to locate a specific reference. I would have liked to have seen more common names given for some of the species. It can be a frustrating exercise trying to determine the exact identity of a plant when all you have for it is a 'local' or seldom-used common name that you cannot find in the book.

Those of us of the editorial persuasion are great nitpickers and we seem to have the nack for picking out typographical errors. This book is relatively free of them, but there are a few that did slip by: cuniate instead of cuneate on p. 66, asprin instead of aspirin on p. 71, axil instead of axile on p. 108, bifed instead of bifid on p. 126, and strouter instead of stouter on p. 144.

Since I have no artistic talent whatsoever, I often feel guilty criticizing the work of others, but if there is a shortcoming to this book, it is the illustrations. On the whole, I would class them as adequate. I do not think any of them are particularly outstanding, and there are a few that are positively misleading! All the illustrations would benefit greatly from some indication of scale. This was done for the cactus illustrations on p. 103, so I do not see why it could not have been done for all. Comparing illustrations of species in some of the larger genera such as Lonicera, Ribes, Rubus, and Vaccinium, you get a poor idea of the relative sizes of the plants and fruits from one illustration to the next because of this lack of scale. Some of the illustrations do not reflect the species descriptions. The leaves of Gaultheria hispidula (p. 71) and Oxycoccus quadripetalus (p. 107) are not notched as the illustrations indicate. The species descriptions make no mention of this either. Looking at the shape of the leaflets, it would almost appear that the illustrations of Sorbus scopulina and S. sitchensis should be reversed. Sorbus sitchensis is the species with the leaflets rounded at the apex, whereas S. scopulina has the more pointed leaflets. The most puzzling illustration is that of Solanum sarrachoides on p. 179. It bears no resemblance whatsoever to the actual plant! Solanum sarrachoides is similar to S. nigrum, and a quick glance might not easily separate the two. I would have expected the illustration of S. sarrachoides to resemble that of S. nigrum on p. 177, except for more hairiness and an enlarged calyx. For those who are familiar with Devil's-club (Oplopanax horridum), the illustration on p. 99 just does not do it justice. There is little indication of the absolutely vicious spininess of the plant, nor is the inflorescence illustrated particularly well. On the other hand, the species descriptions are not infallible either. The illustration of Ribes inerme on p. 133 correctly shows most of the berries to be in clusters (of 2-4) rather than single as the species description suggests. Although it is done for some species, I think a few more illustrations of flowers would make the book more widely usable.

When I first saw a copy of this book I was initially impressed by the clean layout (you certainly cannot accuse it of being cluttered) and general content. Closer inspection reinforced my feelings about the text, but led me to disappointment with many of the drawings. However, the book has mostly good things to offer. Despite the problems with some of the illustrations, I think it would be a worthwhile addition to any "berry-fancier's" library.

J. Derek Johnson

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The Federation of Alberta Naturalists is composed of natural history clubs from across the province. The Federations' aims are:

(a) To encourage among all Albertans, by all means possible, an increase in their knowledge of natural history and understanding of ecological processes;
(b) To promote an increase in the exchange of information and views between natural history clubs and societies in Alberta;
(c) To foster and assist in the formation of additional natural history clubs and societies in Alberta;
(d) To promote the establishment of natural areas and nature reserves, to conserve and protect species, communities or other features of interest;
(e) To organize, or coordinate, symposia, conferences, field meetings, nature camps, research, and other activities whether of a similar or dissimilar nature;
(f) To provide the naturalists of Alberta with a forum in which questions relating to the conservation of the natural environment may be discussed so that united positions can be developed on them, and to provide the means of translating these positions into appropriate actions.

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Editor: Anna Robertson
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DEADLINES for F.A.N. project reports are:

Alberta Christmas Bird Counts, January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB T2V 4H2

May Species Count—Plants, July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB T6H 3S5; *—Birds and Mammals*, July 15, Don Stiles, 20 Lake Wapta Rise S.E., Calgary, AB T2J 2M9

Compiler cooperation is greatly appreciated.

LETTERS TO THE EDITOR

Banders—One of Yours?

Recently I recovered a decayed body of what appeared to be a yellow warbler. The U.S. Fish and Wildlife Service have advised me that the leg band on this bird was not one of theirs, and looks to be a private band. I am hoping that a reader of your publication may be able to identify the band, and provide the data on the bird.

The band is "31919DA218". The dead bird was found in my back yard on 1988-10-14, and was apparently dead for about a week. I live just southeast of the Currie Barracks in Calgary.

Can anyone advise?

Dale Speirs
Box 6830, Stn. D., Calgary, Alta
T2P 2E7.

Remarkable Flowering Date

The note by Scotter and Sommerfeldt regarding a late season flowering of prairie crocus (A.N. 18(1)) prompts me to write of a similar occurrence, also in the fall of 1987, also in southwestern Alberta. However, in this case the species was Townsendia parryi and the place was Waterton Lakes National Park. On November 29, 1987 my husband and I were hiking on the snow-free, southwest-facing slopes of Mt. Galwey when we began noticing blooming Townsendia plants. The altitude was approximately 1830 m. On our descent we counted 27 plants in bloom and no doubt could have found many more had we made a thorough search. ~~November~~ November 29 represents a remarkable 5- to 6-month separation from the normal flowering time of late May through June.

Teresa Dolman

Note: November 29 does indeed represent a remarkably late and widely separated flowering date from the norm for this species. However, a number of composite species have prolonged flowering periods or a spring peak and a minor flowering in the fall. Checking specimens in the Northern Forestry Centre herbarium (CAFB), the earliest date in the main flowering period found for this species is May 24 (Waterton Park) and the latest is July 12 (Kananaskis). However, I observed, photographed, and collected a flowering specimen of Parry's Townsendia at Sugarloaf Fire Lookout, 34 km north of Coleman (49° 51'N, 114° 32'W), on September 12, 1979. There were a few flowering plants scattered along a rocky ridge north of the lookout, at an elevation of 2400 m. Fall flowering of this species may not be as uncommon as initially suspected. More observations in appropriate areas during the fall may substantiate this.

J. Derek Johnson

Parry's Townsendia (Townsendia parryi). (Photo: P.S. Debnam)

PRESIDENT'S PAGE

The Federation's 19th Annual General Meeting—Jan. 28/89

Rob Gardner

Our Annual Meeting has come and gone. Unlike other Annual Meetings you may have been to, it was definitely not boring! True, we did some of the ordinary things, such as....

The Treasurer's Report was reviewed, and we have slightly more money than last year. The Nominating Committee presented a new slate of Appointed Directors and Executive. We welcome the six new directors, and know that their excitement and fresh energy will encourage us all.

Margot Hervieux has resigned as Treasurer, to spend more time with her family. Thanks, Margot, for keeping the books in order, and the bank balance positive! Jim Goodwin will move into this position.

To heat up the meeting, a spirited discussion developed regarding our co-sponsoring projects with environmental "bad guys". Do we appear to condone their mismanagement by appearing with them at a public forum? Is a private meeting any better? The example of Shell Oil was raised. This company received an award for environmental excellence, but was taken to court by environmental groups the next year. Would we accept a donation from them?

After the dust settled, the consensus was that we can communicate with this type of organization, but should control the agenda more carefully. We should not feel any obligation to present their side of the story, since their budget is much bigger than ours. If you have any feelings on this topic, please call your Club Director or me.

This discussion led into the Code of Ethics, which outlines the actions that are appropriate in order to achieve our goals. A draft received approval in principle, and will be circulated to Club executives.

Unfortunately, we did not have much time in which to discuss Alberta's forest habitat. Kevin Van Tighem volunteered to spearhead a group which will draft a policy for the next meeting. This issue, critical to the northern half of the province, will become a major aspect of our activities.

The evening program was co-sponsored by the Canadian Petroleum Association. Before getting into the main program, it gave me great pleasure to publicly thank Pat Clayton, Eileen Coffey, and Derek Johnson for their help over the years.

After, the audience peppered both speakers with questions and comments. Most of these seemed to focus on the lack of firm guidelines reardinq assessments. Too much is left to subjective opinions. Thanks to Doug and Maryhelen for tackling this contentious issue!

Looking back, this challenging day gave me greater insight into the environmental movement in Alberta. I understand better how the public can affect decisions in Industry, and I have guidance from the members on how we should be presenting our ideas.

If you want to get involved, come to the next meeting. It will be held in conjunction with the Flowing to the Future Conference, May 11-13, at the University of Calgary.

ISSUES

Milk River Dam

Kevin Van Tighem

A Milk River Dam may be announced imminently. Approvals have already been received from all levels of government to build the dam. All that remains is to work out financing arrangements and wait for the right political moment.

This dam, if it is built, will be one of the worst and most far-reaching disasters for Alberta's rivers and water in history. Even the Three Rivers Dam on the Oldman - which has greater immediate environmental costs associated with it - pales in comparison to the price Alberta and Canada would pay for the proposed dam on the Milk River.

A 1985 report by the Montana Water Resources Research Centre makes the following statements:

"A joint U.S. Canadian storage facility on the Milk River at the confluence of the North and South forks in Alberta has been proposed and studied by both Montana and Alberta governments. The impoundment would be designed to serve multiple objectives including the provision of storage for both parties unused portions of the Milk and St. Mary's during irrigation season, the protection of downstream bottomlands from seasonal flooding and the reduction of silting in the Ft. Peck Reservoir. This project would require the approval and probably the funding support of both federal governments." (pp. 21-22).

"Alberta water managers have developed and tabled dozens of diversion impoundment projects designed to supplement South Saskatchewan irrigation districts, some of which might impact not only the Milk but Montana's water marketability as well. A major north-south transfer, for example, from the Peace River to the South Saskatchewan basin might increase the desireability of a storage facility on the Milk to take advantage of increased water availability. Alberta may also be tempted to sell surplus water to U.S. buyers (to recharge the Ogallala Aquifer for example) in competition with what could be less reliable domestic suppliers: the upper Missouri states. Although this is an unlikely prospect considering current Canadian public sentiment...it is better to anticipate Canadian actions than to have to react after the fact." (pp. 22-23).

In a June 1988 speech, former Environment Minister Tom McMillan described the newly-released Federal Water Policy. "The policy," he said, "addresses what is fundamentally wrong with the way Canadians handle their precious freshwater supplies--fire-sale prices at the tap.... All evidence shows that people use water the way they use any product -- from oil to sugar: the cheaper the price, the greater the waste. In Canadian communities where a more realistic pricing policy has been introduced, per capita water use has dropped by as much as 20 to 30%".

In Alberta, the Friends of the Oldman River have repeatedly joined water resources professionals who echo McMillan's concern about cheap water. Numerous recent papers in the Canadian Water Resources Journal have pointed out the need for such demand-management techniques as market-sensitive pricing for water.

At present in Alberta, water is not a good that can be bought and sold. Irrigation farmers, for example, pay for a license to use water, but do not pay for the water itself. The decision to charge fair prices for water is politically unpopular; it is much easier to borrow money and build another dam to maintain the illusion of water abundance. But most observers agree that the time is near when fair water pricing will have to be implemented. We have run out of new sources of water.

A dam on the Milk River will make this either impossible, or disastrous. The newly-proclaimed Free Trade Agreement with the United States requires that we provide American consumers equal access to natural resources as Canadian consumers. Once we start to charge a price for water, it becomes a commodity. And with a dam on the Milk River, we cannot long resist the pressure to sell its water to the American market.

From there, it is an inevitable step to inter-basin water diversion. And American farmers, with their longer growing season and established dependence on groundwater aquifers that are already severely depleted, will be able to offer more money for water than Canadian farmers can afford.

Thus, the damage that a dam on the Milk River will do extends well beyond the Milk River basin. It potentially affects rivers up and down the Alberta foothills and - if the Peace and Athabasca are drawn into the equation as proposed by the PRIME scheme - its effects will ultimately be felt on the Peace-Athabasca delta.

In the near term, the greatest concern about a dam on the Milk is an ecological one. Floodplain forests of Plains Cottonwoods need spring floods and silt deposition to remain healthy. As shown above, however, the Milk River dam would be used to reduce spring flooding and silt transport.

The newly released Prairie Conservation Action Plan describes prairie riparian habitats as "some of the most threatened ecosystems in arid and semi-arid regions of the world." It predicts that, without remedial action, cottonwood habitats may disappear by the end of the next century.

The last prairie wilderness in Canada, and the best cottonwood forests remaining in North America, reside along the lower Milk River in southern Alberta. With an upstream dam, they have no future. And as the dam sets the stage for the final implementation of a long-standing inter-basin water transfer system, rivers throughout Alberta will, one by one, be turned south to water soybeans, alfalfa and grains in the United States.

The point of this paper is not to suggest that Alberta Environment intends to sell water to the U.S.A.; it is clearly a matter of policy that they do not. The point, however, is that pricing, one of our most essential tools for coping with a future of growing water demand and shortage, will be rendered unfeasible by a dam on the Milk - and that if we choose to employ it anyway, economic and legal pressures may lead us inexorably into sale of Alberta water to the U.S.A.

As the Oldman River controversy has shown, politicians and water managers would rather unleash a disaster than admit error once they have committed themselves to a line of action. The time to make your views known about the Milk River Dam is now.

Author's address:
Box 2537, Jasper, Alberta T0E 1E0.

Continued on page 26.

Chorus Frog (Photo: Kerry Wood Nature Centre)

1989 Alberta Owl Prowl (and Frog Jog)

Barbara and James Beck

To increase our knowledge and appreciation of owls in this province the Department of Forest Science at the University of Alberta is sponsoring the first ever Alberta Owl Prowl. We are prowling for owls during the winter months to determine the winter distribution of these birds and during the start of the breeding season for each species to determine their breeding distribution. We are not calling owls much into the breeding season because we have observed that such calling appears to greatly disturb other species as well as to somewhat agitate the owls. If you are interested in joining the Alberta Owl Prowl please contact Barb or Jim Beck at 10947-36 Ave., Edmonton, Alberta T6J 0B9, or 435-2065 days or evenings.

On the tape of owl calls which will be distributed to all Owl Prowlers are also calls of the frogs and toads of Alberta. This was done to familiarize birders with the calls of these animals to help locate potentially threatened species, particularly the Leopard Frog which, since 1980, has gone from a common frog to one which is practically extinct in the province. The Frog Jog is not a census of frogs. We are only providing the tape of the calls of these animals and instructions for reporting them to the proper source. Since seven of Alberta's eighteen known species of amphibians and reptiles are uncommon enough to be recognized as potentially threatened we would like to foster an awareness of them.

Recapitulation of the Position of Nose Hill Park

Presented at the general meeting of CFNS on January 18, 1989.

Patricia Stansfield

The CFNS Field Trip that took place on November 27 made me realize that a recapitulation on the position of Nose Hill Park would be timely. So firstly, a bit of history, especially to help newcomers zero in to the fight for preserving this natural city park, which had become provincially, and even nationally, famous.

Many people do not realize that about one half of the 2600 acres designated as a City Park in 1980 still lies in private hands.

In 1973 the City approved a Natural Prairie Park of 4100 acres.

Between 1974 and 1976 the City purchased 1300 acres at about $3050/acre, mostly from Carma developers.

In 1976 the City allowed 1500 of the 4100 acres to be zoned for residential land, and Edgemont was developed. This reduced the area for parkland to 2600 acres.

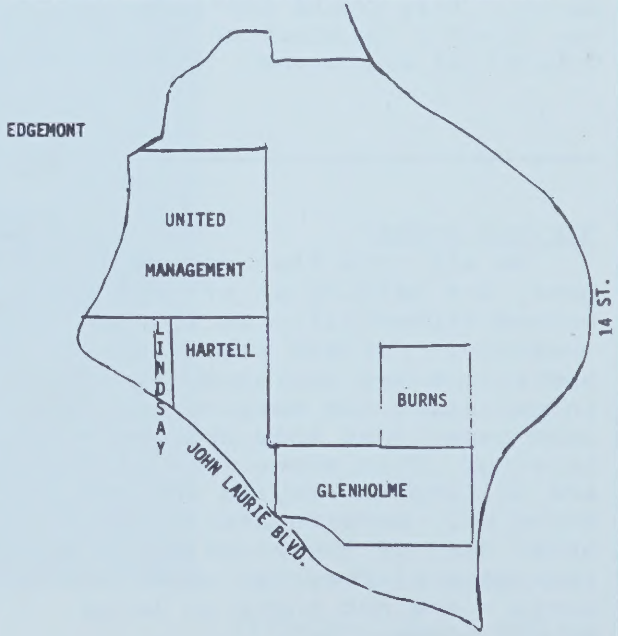
In 1977, probably on the hope of re-zoning, Abbey Glen and United Management purchased parcels of 72 and 628 acres at between $4900 and $6500/acre. But the City did not give re-zoning permission, and their land remained zoned as agricultural.

The history of Hartell's Holdings is a little different. Hartell owned this area before 1973, when it was zoned as agricultural.

In 1981 Hartell sued the City either to expropriate his land or re-zone it as residential. The City Planning Act of 1977 stated that the City must acquire the land that it had frozen within six months, and Hartell won his case. The City then appealed to the Province, and the City won in the Supreme Court of Alberta. Hartell then appealed to the Supreme Court of Canada, and in 1984 the City won again.

Meanwhile the City bought two small acreages in 1983 of 125 and 120 acres and offered the owners between $8700 and $15,000/acre. These prices are comparable to the land's current classification as agricultural urban reserve land, for use as a Park. At the same time offers were made to other landowners, but the offers were refused.

MAP OF NOSE HILL SHOWING PRIVATE LANDOWNERS



In 1986 a Planning Amendment Act, called Bill 52, was tabled in the Alberta Legislature. It stated that when land is frozen for re-zoning by the City, the City must acquire the land within 6 months or commence to acquire it within a reasonable time. However, as this Bill goes against the Supreme Court of Canada hearing of Hartell against the City of Calgary, it is most unlikely that it will come before the Legislative Assembly.

In the spring of 1988, a Task Force was set up. Its duties are to negotiate with the landowners with the hope of coming to some reasonable agreement between them and the City in order that Nose Hill becomes a park of 2600 acres as decided in 1980. The Task Force is comprised of a Chairman, Commissioner Cornish, 2 MLA's, 2 Aldermen and an Administrator of Municipal Affairs from the Province. They were supposed to report to City Council last autumn, but actually they only met for the first time on October 20. Mayor Klein hopes to have an answer from them by the end of February, but the Task Force may not present their findings until the end of March. This could coincide with our Mayor's resignation and the Provincial elections. And so the ball game with Nose Hill Park could start all over again.

Meanwhile Hartell and United Management have not been idle. Hartell has dug a well to find out the situation of water on his land. He intends to sub-divide his property into 4-acre lots. As he owned his land before 1973, the zoning states that he is allowed one building on each parcel of 4 acres, although the building allowed should be a farm building. He has already been given building permission for a 4000 sq.ft. building (or house?) but has promised not to start construction until the end of March.

United Management has erected a large notice on their land stating that they intend to develop 526 acres into executive homes. But United Management does not come under the same zoning regulations as Hartell, because they only bought the land in 1977.

If the 2600 acres of Nose Hill is to be preserved intact, it is essential to follow up the decisions of the Task Force. This fight about Nose Hill has been going on for too long.

Authors's Address:
608 -63 Ave. N.W, Calgary, Alberta
T2K 5L3.

RECYCLE PAPER!

We all know that recycling is good, but getting it off the ground economically is another question. Current recycling operations are having difficulty in marketing the massive amount of used paper that they are now receiving. This shows that people are willing to recycle and are doing so. Unfortunately, the other half of the equation - the consumers of recycled paper products - are not there in large enough numbers yet.

One of the major consumers of paper in our society is government. Perhaps it is time to start asking municipal, provincial and national government agencies why they are not using recycled paper products. How about encouraging your councilor, alderperson, MLA or MP to initiate a paper recycling program in their office?

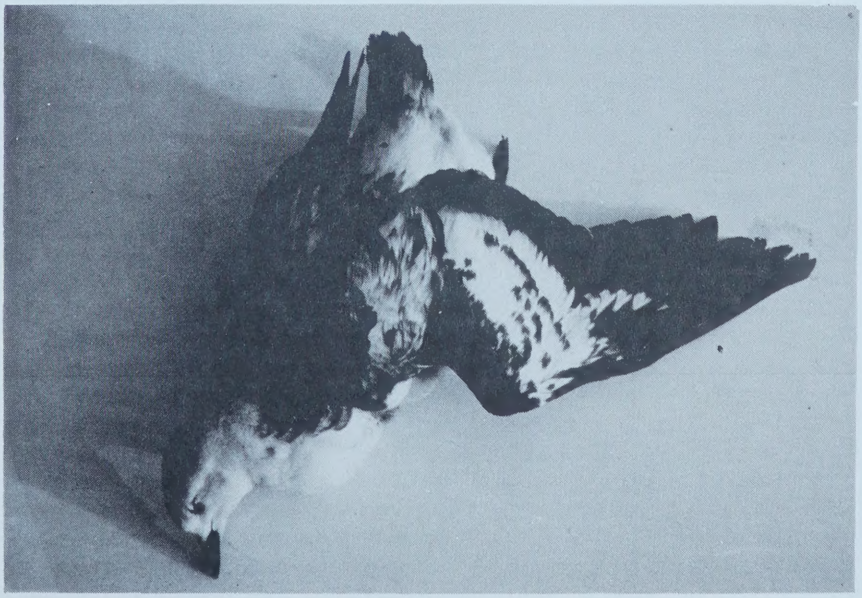
The First Black Guillemot Record for Alberta

Ken Lumbis

On November 21, 1988, Ray Stokke was proceeding towards Hines Creek, Alberta on Highway 64 when he noticed a dead bird lying on the middle of the highway. The bird seemed unusual so he stopped the vehicle and returned to pick the bird up. The land location where the specimen was found was SW22-83-4-W6(UTM location: 11MN02). He did not recognize the specimen so he placed it in the back of his truck where it remained until it was brought in to the author on November 29 for identification.

The bird was identified as a Black Guillemot, Cepphus grylle, a member of the Family Alcidae. This is apparently the first record of a Black Guillemot in Alberta and the second for the Alcidae family. The other member of this family which has been previously recorded in Alberta is the Ancient Murrelet (Synthliboramphus craveri). The Black Guillemot is primarily a species of the north-eastern and eastern coasts of North America. This is however, a population which breeds and winters along the northern coast of Alaska.

Why this specimen was passing through Alberta is not known. This record however, is not an isolated incident but one of three for interior Canada. A Black Guillemot was reported in Regina, Saskatchewan and a number of individuals were reported on Great Slave Lake near Yellowknife. Analysis of weather patterns may provide some insight into reasons why this coastal species was found in interior Canada. The specimen was turned over to Alberta Fish and Wildlife Division.



Black Guillemot

(Photo: Ken Lumbis)

Elk Island Birds

Bob Carroll

For those wanting to keep an up-to-date checklist of Elk Island birds here are a few new species and some exciting news of a change in status of several existing species.

Mountain Chickadee

Rarely seen in Alberta east of the Rockies, a single Mountain Chickadee was first seen by Park Superintendent, Dave Pick, in November of 1987. In company with Boreal and Black-capped Chickadees it was noted a number of times throughout the winter. (The day after the Christmas Bird Count is one that I remember).

Baird's Sparrow

While birding southeast of the buffalo paddock, in the "hay meadows" area for the Alberta Bird Atlas Project, I came across approximately half a dozen of these birds singing their short but beautiful song. Surrounded by the much more common Savannah Sparrow they seemed to have found a bit of habitat to their liking. A bird of the open grasslands of southern Alberta they have rarely been recorded in the Edmonton area. Though the time of year (mid-June) and their singing behavior would indicate at least an attempt at nesting, for now class Baird's Sparrow as a summer visitor.

Double-crested Cormorant

Yes, Double-crested Cormorants do nest in Elk Island and probably have been doing so for years. That the small colony had not been found until May of last year serves to point out the birds' need for security and seclusion in their choice of nest sites. Through wind and rain the nests, fragile and precariously placed in dead trees standing in the water of a beaver pond, held together long enough to fledge approximately 40 young birds. The nests do not last through the winter and must be replaced yearly. The Double-crested Cormorants often seen on Astotin Lake, long presumed to be non-breeding birds, are indeed summer residents.

Great-crested Flycatcher

A pair of Great-crested Flycatchers first reported carrying nesting material during the Elk Island Birder's Challenge (June 4, '88) successfully fledged young (July 12th) from a cavity 20 feet up a dead poplar just off Amisk Wuche Trail. This is a first, not only for Elk Island but the first record of this species nesting in Alberta.

Sprague's Pipit

Classed as a rare migrant, an arrival/departure date of May 26 would indicate only one previous recorded sighting. Like many other birds of the open plains, the Sprague's Pipit performs its courtship song while in flight. Spiraling upward until almost lost from sight (I won't say how long I spent scanning the horizon and nearby bushes before it dawned on me to look up!) it finally dives back to earth.

Often at this point the female will fly off the nest as if to greet the male and complete the courtship ritual. This behavior, observed in the Park's "hay meadows", confirms Sprague's Pipit as a summer resident.

Some species to watch for this year:

There were many observations of Cinnamon Teal from different areas of the Park, some obviously paired. Possibly expanding its range northward due to drought and habitat loss, could this beautiful duck now be nesting in Elk Island?

Barrow's Goldeneye normally nest in Alberta only in the Rockies. It is not uncommon to see them in Elk Island throughout the spring and summer. Suitable nesting habitat, beaver ponds and abundance of dead snags, preferred by these cavity nesting ducks, would seem to make their nesting in Elk Island a possibility. Another potential new species is the Greater Scaup. Do they occur along with the large numbers of migrating waterfowl on park lakes? Anyone interested in some serious "Scaup watching" this spring?

For more information on these birds see "The Birds of Alberta" (Salt and Salt) and, for more park specific information, "Finding Birds in Elk Island National Park" by Judith Cornish.

When do spring migrants return to Elk Island? Look for the first Crows and Canada Geese the last week of March. Mallards and Pintails along with Red-tailed Hawks, Northern Harrier and_Mountain Bluebirds arrive the first week of April. For me the first bird of the spring is the Starling. By mid-March small flocks will have returned to bicker over potential nesting holes in the poplars. After a long and quiet winter, their chirps and whistles sound like something perhaps a bit more exotic. But no, it is just the Starlings. Ah! But at least it is Spring.

Author's Address:
R.R. 2, Fort Saskatchewan, Alberta
T8L 2N8. Phone: 998-0082.

Greater Scaup, (Photo: Jim Salt)

Banding—Calgary Area—1988

Don Stiles

A total of 1487 bluebirds (148 adults, 1339 young) and 963 Tree Swallows (151 adults and 812 young) were banded in 1988. The most prolific bander was George Loades with 714 bluebirds (60 adults, 654 young) and 472 Tree Swallows (64 adults, 408 young). 1988 marked the first year on Calgary Area trails where there were more bluebirds banded than Tree Swallows.

Tree Swallow

(Photo: Kerry Wood Nature Centre)

RECAPTURES 1988 - Bluebirds

	Distance Moved			Banded as Adult or Young		
	Same House	3 Mi.	3 Mi. or	Adult	Young	Total
Don Stiles	4	3	2	5	4	9
Ray Woods	1	1	1	2	1	3
George Loades	3	16	6	15	10	25
*Others	1	1		2		2
Total	9	21	9	24	15	39

RECAPTURES 1988 - Tree Swallows

	Distance Moved			Banded as Adult or Young		
	Same House	3 Mil.	3 Mi. or	Adult	Young	Total
Don Stiles	1	5	5	9	2	11
Ray Woods	2	7	1	10	0	10
George Loades	2	11	9	15	7	22
*Others	3	1		4		4
Total	8	24	15	38	9	47

*Others - Estelle Kethler, Bob Rhodes, Les Thirsk

For more information about these recaptures, please contact the author.

Author's Address:
20 Lake Wapta Rise S.E., Calgary, Alberta T2J 2M9.

Lady Rainbow, The Hummingbird Mom

Margaret Cristall

We live in Waterton Lakes National Park and we see a great many hummingbirds, mostly Rufous and Calliope, but we have never been fortunate enough to have seen a nest. We spend out winters in Mesa, Arizona, where over the past few years we have seen four nests. All of them have been built under the shelter of aluminum awnings which are attached to trailers in which many of us winter visitors - or "snow birds"as they call - live for several months each winter.

The first we saw was a tiny, beautifully constructed nest built mostly of cotton fibres and lashed with spider silk onto the knot in a loop of electrical wire. The nest had been abandoned and contained two white eggs the size of navy beans.

We left a similar loop of wire with a knot in it hanging under our awning when we came home the next spring hoping to see a nest when we arrived back in Mesa in November, but no luck.

The following spring I crocheted a tiny "starter nest" from a variegated yarn in shades of beige, light tan and off-white and attached it to a knot in a loop of electrical wire. We hung that up before we left for Waterton and when we returned to Mesa in November we found that a nest had been built, had been used, and was empty.

I repeated the procedure early in February and on March 21, 1987 a little non-descript hummingbird with only a tiny dark spot in her dullish grey breast and quite a bit of white on her tail feather edging examined the starter nest, found it to her liking and proceeded to build. One week later she laid one tiny white egg and another one the next day. Three days later we found the two eggs broken on the carpet below the nest. We have no idea of what had taken place but we did gain some knowledge from that experience.

The nest had been built directly opposite the patio door - a poor choice of location on my part as I had hung it there. She was disturbed and flew off the nest as people went in and out of the trailer. She would also fly off the nest at night as we drove in with the car, not to return until daylight. Obviously, she would not have been able to hatch the eggs under those conditions.

Not too many of us have the time and/or the opportunity to watch at the intimate distance of a few metres, the process of nest building through to baby bird feeding by a mother hummingbird. This tiny pinch of feathers became very close to our hearts and, as it turned out, very patient with us.

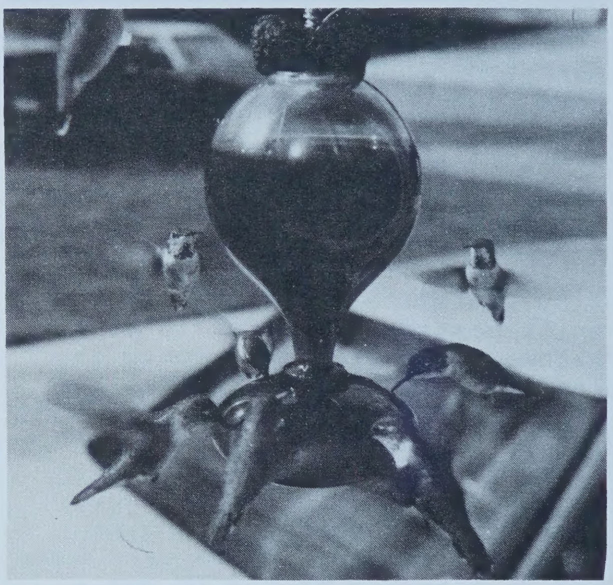
After exhausting what material we could find on hummingbirds we concluded that she must be an Anna's Hummingbird. The Anna's was the only one listed as having a red throat. The throat feathers on our bird changed from red through orange, through a bronzy green all in a shimmering metallic shade depending on the light and on her swiftly changing moods. Her crown and back were a bottle green with a dark, longish tail; the other edges of which were tipped with white.

On March 21, 1988, exactly one year from our last nest building visitor, this hummingbird cruised around the patio area beneath the aluminum awning examining the starter nest ,and the several wind chimes. She finally chose a wind chime made of dark green metal and bamboo and fashioned in the shape of an owl with two ears and large black eyes topped by a yellow cord by which it hung from the centre beam that ran the 12 m length of the awning. Our better judgement told us to remove the wind chime and discourage the nest building as it was directly opposite our patio door. In the end our selfish natures won out and we compromised. If "Lady Rainbow" wished to build, we agreed that the wind chime with the nest must be moved to the back of the beam away from the front door.

Each day as the building progressed we moved the owl chime complete with nest back a metre or so, so that by the end of the fourth move, the nest was about 9 m from the front of the trailer. With each move she would fly directly to the spot where the nest had been, almost as if she had been programmed to fly just that far and not a cm further. Then with tiny stabbing motions she would investigate that entire immediate area before widening her search area and finally finding her nest. Once she found her nest she would continue right on with her building. She repeated this exact routine on each of the four moves.

Shortly after the final move down the beam, I put up a ladder in an attempt to get some pictures of the nest-building. This one was a real "Nervous Nellie" in comparison with last year's tiny nest-building bundle. As a result, those hours on the ladder became a real pain. We next moved a table beneath the nesting area and put a three-step stool on the table as my perch. I spent many hours up there and was able to get a few pictures.

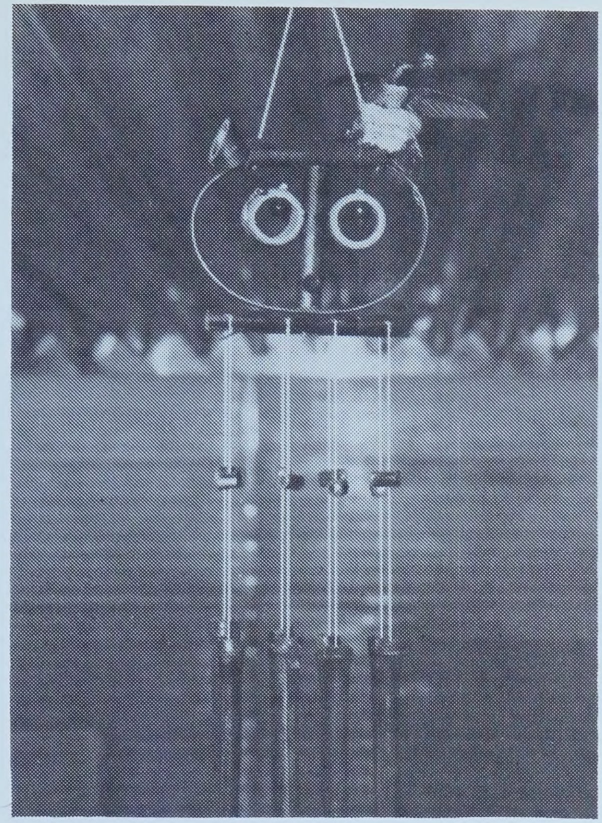
On March 27th, six days after she started to build, she laid her first egg. On March 30th she laid her second egg. Being a larger bird than last year's she laid bigger eggs, I would say about half again as large and shaped like "Tic-Tac" candies, rather long and narrow. She started sitting as soon as the second egg appeared. Up until then it had been a half-hearted pursuit - now she got down to business and spent much time on the nest.



Hummingbirds at Waterton Park

(Photo: Margaret Cristall)

We did several things to accommodate her. There are two outdoor lights on the trailer, one outside the front door and one outside the back door. We unscrewed the back door light and replaced the 60 watt bulb in the front door light with a 15 watt bulb. We moved the table and sun chairs up near the front. We got permission from friends who were leaving for home to let us leave our car in their driveway at night and we saw to it that all the chores that would involve going into the shed, which was very close to her nest, were completed



Nest Building in Mesa, Arizona
(Photo: Margaret Cristall)

during the day. Thus, Lady Rainbow had the run of the roost at night, the critical time for being disturbed. We could come and go quietly and normally and were able to sit out on the patio in the evening or at night. Early in the nesting we started to check on her with a flashlight once every night. She did not mind.

About her eighth day of nesting we decided to move her wind chime and nest down a bit at a time to facilitate watching the eggs and eventually the baby birds. By attaching a small piece of chain to the beam we brought the nest down about 25 cm. Two days later we lowered it to almost eye level. From then on we could look into the nest with a mirror held above the nest.

There was a three-tier citrus basket hanging about 90 cm beyond her nest upon which she liked to perch, especially when the temperatures reached 35 -38° C. During those hot days, and there were many, she would leave the eggs uncovered for an hour or more at a time. We did not want to leave the citrus basket out when we had to go back to Waterton Park so I made a two tier perch from two rings of covered wire and yarn and we hung it up in place of the other basket. She took this for her own without the slightest hesitation.

There was a small Aloe Vera bush about 36 cm high in front of our neighbour's trailer and this was one of her favorite perches as soon as the bush was in the shade. She sat in exactly the same spot on exactly the same branch of the Aloe Vera every time she perched there, always facing the same direction which was away from her nest.

From the first moment of nest building until nearly four weeks later when we left for home she never once entered the patio area if anyone was outside without an incessant sharp and very loud tick, tick, tick! It sounded as if her beak was snapping shut and creating that sound. She moved in and out without a sound if no one was around.

Fifteen days after she laid her second egg the first dark brown, bug-like tiny wee bird arrived followed by the second one the next day. We noticed her perched on the side of the nest and pumping food into that tiny little thing about 7 a.m., not long after the sun was up, so we must assume that it was pretty new. Even during that first day she seemed to open her beak slightly as soon as she found the babies' tiny beak (the beaks are very short at birth) and seemed to lift the baby into an upright position prior to pumping food into it with such force and determination that we could well imagine the baby impaled on momma's beak.

The babies were only three days old when we had to leave for home but we were thrilled and thankful to have seen that much of them.

The day before we left I was standing on the top step at the back door, about 1.8 m from the nest, trying to get some pictures of the mother feeding her babies. Just as I was turning the film to the next frame another hummingbird flew in and for the space of about 4 to 5 seconds hovered right beside the mother. By the time I got the camera up to my eye the intruder had flown away. I expected the mother to be aggressive and drive the intruder off but she stayed perched on the side of the nest as still as a statue the whole time.

On April 17 we had to say good-bye to Lady Rainbow and her little ones, with some regrets I might add, but we could almost hear her saying "Well, good! - We've finally got rid of them. Maybe we'll have some peace and quiet around here!"

We have felt honored and most privileged to have been permitted such an intimate glimpse into the lives of Lady Rainbow and her young and we thank her for her patience!

Author's Address:
Box 8, Waterton Park, Alberta T0K 2M0

The Habitat Steward Program

Myrna D. Pearman

In the spring of 1987, the Alberta Fish and Game Association launched a unique program designed to provide recognition to farmers and other Alberta landowners who conserved habitat for game animals on their land. Deserving landowners were to be awarded with gate signs and wall plaques that carried the inscription "HABITAT STEWARD".

Soon after it was initiated, the project idea was brought to the attention of the Red Deer River Naturalists. It was immediately apparent to us that this was an idea long overdue in Alberta, and was a project that our 300 member-strong natural history group could support and promote. The Fish and Game Association fully agreed with our suggestion of implementing a modified, regional program that would recognize the importance of habitat conservation for all wildlife, not just game species.

As an organization strong on enthusiasm but short on surplus funds, we knew that we could handle the logistics of the program, but would need to find a sponsor in order to acquire the signs. This was easier to accomplish than we had anticipated, as it was only a matter of weeks before Project Coordinator Murray Mackay announced that the entire project was in place and that Alberta Government Telephones had

AGT
HABITAT
STEWARD

Habitat steward Coordinator Murray Mackay attaches the first Habitat Steward sign, awarded to Geoff and Dorothy Hazlett of Red Deer.
(Photo: Myrna Pearman)

agreed to provide the monies to purchase 100 51 cm x 61 cm baked enamel gate signs.

The first landowners to be awarded a sign for conserving 32 ha of wildlife habitat on their farm were Geoff and Dorothy Hazlett of Red Deer. Since that premiere presentation in December, 1987, over 62 landowners in Alberta have applied, or have been nominated, to become Habitat Stewards. This represents almost 3000 ha of aspen parkland, forests, potholes, stream banks and marshes that farmers have, on their own initiative and at their own expense, been willing to protect for Alberta's wildlife. Though hardly compensation for their sacrifice, this program at least offers a small "thank-you" to these stewards who have put the long-term integrity of our planet ahead of short-sighted, short-term gains.

The Red Deer River Naturalists are grateful to Alberta Government Telephones for supporting this project. We would like to encourage other concerned volunteer groups to sponsor their own regional Habitat Steward program. For further information, contact the Red Deer River Naturalists (Box 785, Red Deer, Alberta T4N 5H2).

Author's Address:
Box 785, Red Deer, Alberta T5N 5H2.

CLUB NEWS

Bow Valley Naturalists

Wednesday, April 26. Ways Of Seeing Rivers. Different perspectives on Alberta's rivers and their ecology, with Kevin Van Tighem of Jasper, co-chairman of the Flowing to the Future conference.

All meetings are held in the Banff Firehall and begin at 8:00 p.m.

EVENTS:

Friday (evening), Saturday & Sunday, April 28-30, The Alberta Wilderness Association will hold its annual conference in Canmore. Guest speakers, issue updates, social events and field trips. The McIvors will be helping to organize this affair and volunteers are needed. For more information contact the McIvors.

Banff Recycling Society - B.V.N. welcomes the appearance of this "new kid on the block". Initial efforts will focus on organizing, public education and the actual recycling of newspaper. For more information contact Beth Woolley at 762-5465. Canmore residents too, are looking into the logistics of recycling. We hope to be able to report the establishment of their operation in our May newsletter.

ISSUES:

Banff Townsite Plan. The draft plan should be in the hands of the public any day. Public meetings were to be held soon after the middle of February.

Former (alas!) Environment Minister Tom McMillan approved the individual management plans for the 4 Mountain Parks just before the November election. As a result, the Canadian Park Service will be doing a great deal of work, setting priorities, and preparing plans for day use areas such as the Vermilion Lakes road and the Cave & Basin marsh. And much more.

Sometime before spring our executive will meet with Superintendent Dave Day and his staff. This will be an opportunity to offer our opinions as to which matters deserve priority in the implementation of the Banff National Park Management Plan.

B.V.N. will extend our support to the Upper Bow Valley Fish & Game Association in their efforts to have one of the most significant trout spawning sites in the province protected as a Natural Area. This site, downstream from Canmore, was threatened for a time by a proposed air strip and is now threatened again, this time, by a proposed golf course.

Alberta's Tory politicians, both federal and provincial, continue their aggressive assault on national parks and park values. Their misguided views on the Sunshine expansion proposal are well known. Now, provincial Tourism Minister Don Sparrow has taken up the cudgel on behalf of the Red Deer Chamber of Commerce who want to see the David Thompson Highway pushed through Howse Pass.

People who care about national parks should make every effort to speak or write to their M.P.'s and M.L.A.'s. It is time for some serious educating to be done. Our politicians seem out of touch. Have you talked to your Member lately?

CHRISTMAS BIRD COUNT RESULTS

Banff-Canmore. This year's count was notable for producing over 300 more individual birds than ever before. As usual, a good proportion of the total (over 20%) were the mallards of Mallard Alley in Canmore. An all time high of 8 Killdeer was reported, with 6 at the Cave and Basin and 2 at Carrot Creek near where it enters the Bow River. 2 Blue Jays in Canmore, a Winter Wren at the Cave & Basin, a Merlin at the Vermilion Lakes and Northern Pygmy Owl on Mt. Norquay were some of the interesting species. Jon Whyte and Louise Patton, working the "Christmas Cake Circuit" in Banff before "fleeing there" for a gallery opening, found a Red-winged Blackbird in Valleyview to match one reported from Canmore.

Bow Summit. The McIvors were on their own for this C.B.C. Predictions for a day of bitterly cold temperatures did not come true and the conditions were most enjoyable for a count. The highlight of the day (known henceforth as Ptarmigan Sunday), indeed, the highlight of more than a decade of C.B.C.'s at Bow Summit in 1976.

Incidentally, the lone Ptarmigan found last year by Jon Whyte and Louise Patton, joined single birds from Fort St. James, B.C. and a count in the Colorado Rockies in a tie for the North American high. We are hoping that Bow Summit will stand alone, this year, with the highest count of White-tailed Ptarmigan in North America. Next year we should make a concerted effort to surpass the all-time record high for the continent, of 28 birds, held by the Rocky Mountain count in Colorado.

"Let's Leave Some Wild in the West" is the battle cry of the Prairie Conservation Action Plan which is a 5 year program of World Wildlife Fund Canada. It calls for urgent action to ensure the survival of prairie ecosystems. In the words of Adrian Forsyth, one of Canada's leading natural historians: "Within one human lifetime, the prairies have passed from wilderness to become the most altered habitat in this country and one of the most disturbed, ecologically simplified and over-exploited regions in the world. The essence of what we risk losing when the grasslands are destroyed is not a species here or a species there, but a quality of life, the largeness and wildness that made this country remarkable".

Proceeds from our meeting last October - the Bob Sandford program on Giant Pandas and Mountain Gorillas went to World Wildlife Fund for their work on the prairies. Anyone wanting more information on this or other aspects of W.W.F. activity in Canada should write: World Wildlife Fund Canada, 60 St. Clair Ave. E., Ste. 201 Toronto, ON M4T 1N5.

Bamfield Marine Station Camp

The Federation of B.C. Naturalists has invited our members to take part in their annual Bamfield Camp. To be held September 3 to 10, this weeklong immersion in coastal life both in and out of the water promises to be an exciting and interesting experience. The cost of $400 includes room, meals, activities, and use of boats and labs.

For more information, contact: Helen B. Akrigg, Co-ordinator, FBCN '89 Bamfield Camp, #8, 2575 Tolmie St., Vancouver, B.C. V6R 4M1 or phone Helen at (604) 228-8606. Hurry though, only four spaces have been reserved for Alberta participants!

Calgary Field Naturalists' Society

1988 - Bob Greggs

Another very active and successful year for the Calgary Field Naturalists' Society was highlighted by an interesting slate of guest speakers, two important publications by members, and many well-attended field trips.

The speakers included:

January--Ben Gadd, author of Handbook of the Canadian Rockies, presented a natural history tour of Jasper National Park which included a discussion of the exploration of the Castleguard Caves, Jasper. The Design Concept of the Calgary Nature Centre was presented at the same meeting by students from U of C Faculty of Environmental Design.

February--due to the Winter Olympics activity on the U of C campus the February General meeting was cancelled.

March--Dr. J.F. Wilson of the U of C Department of Astrophysics provided a fine evening of slides of the solar systems presenting the latest word on the planets and comets.

April--Don Brinkman, Curator of Vertebrate Paleontology, Tyrrell Museum, discussed the joint exploration activities of the Tyrrell Museum staff and Chinese paleontologists to study the paleontological resources of China, particularly the vertebrate fossil fauna of Inner Mongolia.

May--Dr. George Scotter of the Canadian Wildlife Service, and author of the Wildflowers of the Canadian Rockies, presented a spectacular wildflower slide show featuring the photography of Halle Flygare.

June--The Annual General Meeting was held this month and the NFB film entitled Elk Island - managing a sanctuary, was screened in lieu of the normal invited speaker presentation.

September--Mike Duffer, Resource Management Officer at Fish Creek Provincial Park summarized the Park's efforts over the last few years to re-introduce Prairie Falcons into Fish Creek Provincial Park. A lively discussion followed.

October--Dr. Gordon Pritchard, Department of Biological Sciences, U of C, presented an informative and beautiful series of colour slides entitled 'Costa Rica - a Natural History Excursion'.

November--Ted Pyke of the Department of Biological Sciences, U of C, impressed the CFNS members with wonderful colour slides and specimens in his presentation of 'The Butterflies of Alberta'.

December--Annual Christmas Quiz: conducted this year by Jim Posey and his travelling computer. The Quiz was won by a dazzling display of nature knowledge by Dave Elphinstone.

Christmas Bird Count. Many avid birders turned out again for the annual Christmas Bird Count in Calgary with weather that was almost too pleasant. The count was a respectable 62 species in Calgary and although not quite as high as previous years the day was still considered a great success.

Bird Study Group. Another active year of field trips, and several speakers presenting insights into such diverse birding topics as bird habitats in Alberta; birds of Queensland, Australia; hawks of Sheep River, Alberta; gulls of the Northwest; and an evening discussion of the ongoing Bird Atlas Project. Also planned is renewed activity on the Bird Guide to the Calgary Area, hopefully resulting in publication.

Botany Study Group. Another series of field trips weekly from April to August. The ongoing winter season activity was a twice monthly study in the University Herbarium on a simple key to Alberta flowers.

Mushroom Study Group. Field trips by this group were conducted from June through to September concentrating on numbers of species associated with different habitats, and rare specialized groups of mushrooms.

Natural Areas Group. Many months of dedicated writing and compiling by the Natural Areas Group culminated in November with the publication of Nose Hill - A Popular Guide edited by Beryl Hallworth. Early sales records suggest it will be a best seller.

Publications by Members. Another major contribution to the flora of Alberta was the publication of A Field Guide to Alberta Berries by Olga Droppo with exquisite line drawings by Hope Johnson. This publication is CFNS' Wildlife '87 Project. (See review in AN 18:4).

On-Going Events:

Bird Study Group meets the first Wednesday of every month at 7:30 p.m. in Room 211, Biosciences Building, U of C.

Wednesday, 1 February: Liz Saunders presented The Birds of Dinosaur Park - with reference to habitat and breeding bird densities.

Natural Areas Study Group will not be meeting again until May. The group will be enjoying a well earned rest following the concentrated effort made to prepare the Nose Hill book. If you haven't already done so, be sure to purchase a copy of: NOSE HILL - A POPULAR GUIDE prepared by the Natural Areas Study Group and published by CFNS. It is now on sale at bookstores across the city and is selling extremely well. The guide is CFNS' contribution to the bid to save Nose Hill from further development. It covers all aspects of the natural history of Nose Hill from geology to lichens. You can purchase a copy at the General Meeting or from Beryl Hallworth - 282-7447 or Don Stiles - 271-4689. Price: Members $4.00, non-members $5.00. The price in the shops ranges from $6.00 to $8.00. We're very pleased with this book and extend our thanks to all those who volunteered their time and talents to its writing and publication.

Botany Study Group meets on the 1st and 3rd Monday of each month to work on the winter herbarium project. The objective is to compile a simple key to Alberta flowers (similar to the one developed for Saskatchewan flowers by John Hudson in 1985).

Meet at 7 p.m. (for two hours) in the Herbarium which is in the basement of the Biosciences Building at the University of Calgary. Come along and learn to key out plants., Any queries, contact Jim Posey - res: 269-2409.

General Meetings are held the third Wednesday of each month at 7:45 p.m. in Room E-241 Engineering Building, 2nd level, University of Calgary.

Alberta Native Plant Council

Peter L. Achuff

ANPC became officially active in 1988 with a workshop on rare plants in Alberta that was held on 13 February in Edmonton. The workshop was attended by more than 50 people from across the province. The status of plant conservation programs was reviewed on the provincial, national, and international levels. Four workshop sessions were also held on: the role of the non-professional, protection and management, education and information, and research needs. These sessions were followed by a discussion on the elements of a plan of action for plant conservation in Alberta. The workshop ended with the first official business meeting which approved Articles of Incorporation for ANPC under The Societies Act and elected officers for the coming year. Elected were: President - Peter Achuff, Vice-President - Cliff Wallis, Secretary - Lorna Allen, Treasurer - Julie Hrapko, F.A.N. Director - Derek Johnson, Northern Director - Elisabeth Beaubien, and Southern Director - Shane Porter. Incorporation as a society was subsequently completed on 4 May 1988.

ANPC currently has 81 members and works mostly through its four committees: Rare Plants, Information and Education, Conservation Action, and Reclamation and Horticulture. ANPC activities during the past year included:

1. leading a field trip to the proposed Big Sagebrush Natural Area,
2. preparing species status reports for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC),
3. promotion of and participation in the May Species Count,
4. sponsoring a plant study group in conjunction with the Edmonton Natural History Club,
5. participation in moving orchids near Red Deer that were threatened by road construction,
6. correspondence with a variety of government officials about plant conservation issues,
7. discussions with Nature Conservancy of Canada (NCC) officials about establishing a computerized data base on natural heritage resources in Alberta.

ANPC also publishes a newsletter ("Iris") which appears three times a year (spring, fall and mid-winter) and is proving very useful in maintaining contact with our widely-dispersed membership.

Activities during the coming year are planned to include: a workshop and annual meeting probably in early April in central Alberta, sponsorship of plant study groups and courses, promotion of the May Species Count through wildflower posters and other materials, sponsorship of several field trips in the summer, participation in the Prairie Conservation and Endangered Species Workshop in Regina in January, continued liaison with COSEWIC and NCC officials on matters of mutual interest, and correspondence with government officials on topics affecting plant conservation such as proposed highway construction near the Wagner Natural Area, the effect of river flow regulation on cottonwood forests, and off-highway vehicle impacts in the Cardinal Divide area.

Lethbridge Naturalists' Society

Graeme Greenlee

January 19, 1989, a workshop was held in the Jefferson Community Hall, southeast of Cardston, to discuss the Ross Lake Candidate Ecological Reserve. The LNS was unable to send a representative, but a letter in support of the reserve was written to Alberta Forestry, Lands and Wildlife. January 23, 1989, a presentation was made by Kim Godwin of the LNS and a letter was written by the Society to Lethbridge City Council in support of a trial wast recycling project in Lethbridge.

January 10, 1989, Gaylen Armstrong of the Alberta Fish and Wildlife Division in Lethbridge presented a program on the courtship and breeding behaviour of sage grouse in southeastern Alberta.

February 10, 1989, Dr. Bob Hall, president of the LNS, showed slides on his recent trip to the Galapagos Islands and Peru.

March 10, 1989, Keith McDougall of Waterton Lakes National Park spoke on Africa - Kenya, Zambia and Malawi.

April 14, 1989, Frank Deboon, formerly a ranger in Writing-on-Stone Provincial Park and now residing in Fernie, B.B., will speak on wildlife photography.

Planning is now underway for the upcoming summer field trip season. Under consideration are the Police Outpost Wetlands southeast of Cardston, a spring duck identification fieldtrip, the Milk River Canyon south of Foremost near the U.S. border, the Upper Bob Creek area and/or the Ptolemy Creek area in the Crowsnest Pass region, Shank's Lake in the foothills south of Lethbridge, and possibly some short hikes in the Oldman River Valley within the City of Lethbridge. For details, contact Graeme Greelee at 328-8977 in Lethbridge.

Indoor meetings are held on the second Friday of October, November, and January through April, 7:30 P.M. in room 1028, Cousins Building, Lethbridge Community College, 3000 College Drive South, Lethbridge.

Red Deer River Naturalists

Myrna D. Pearman, Ken Larsen, Linda Larsen

Spring is fast approaching! If backyard landscaping is in your spring plans, be sure you have a copy of our BACKYARDS FOR WILDLIFE booklet on hand. The booklets are $5.00 each and will be on sale at the Kerry Wood Nature Centre Bookstore.

"WE RECYCLE" STAMPS

Do you re-use envelopes or paper? How about advertising it? Board member Murray Mackay designed "We Recycle" stamps to help each and every one of us spread the recycling message. If you would like to order a stamp ($9.00), call Murray at 783-4310.

ALBERTA BIRD ATLAS PROJECT

It's Bird Atlas time again! We are now entering the third year of this five year project and are still looking for keen (both beginner and expert) birders to participate. We desperately need atlassers for the area west of Rocky Mountain House. If you are planning a camping, hiking or canoeing trip in the west country this summer, how about working on the Atlas at the same time? If you are interested, please contact Myrna at 346-2211.

BIRDING WORKSHOP

Do you need to brush up on those hard-to-identify bird species that are found around Red Deer? Whether you are an atlasser or just a backyard bird watcher, plan to attend a birding workshop on May 5 and 6, 1989. Expert birder Richard Klauke from St. Paul, Alberta will be leading the workshop. He will cover, in detail, the flycatcher, warbler, gull and sparrow families. The workshop will consist of an evening classroom session followed by a field trip the next morning. If there is enough interest, we will also take in an evening "owl prowl".

While the final details have yet to be worked out, the Red Deer workshop will be held on Friday evening, May 5, and Saturday morning, May 6. The Rocky Mountain House workshop will run Saturday evening, May 6, and Sunday morning, May 7.

For more information, or to register, please contact Myrna at 346-2211.

GREAT BLUE HERON PROJECT A SUCCESS

We are happy to report that twelve new suites have been added to the Anderson Creek Great Blue Heron colony. On February 8, Neil Godlonton and Hal Innis from TransAlta Utilities (Rimbey office), Pat Young from Alberta Fish and Wildlife Division and Jim Potter from the RDRN and the Red Deer Fish and Game Association successfully straightened the six utility poles that had been dropped into a beaver dam on Anderson Creek last November. On February 21, Neil Godlonton and Mark MacDonald from TransAlta Utilities, with the able assistance of volunteer Jim Potter and Fish and Wildlife staff member Kevin Winggert, fastened two nesting structures to each pole. The pieces for each nest were cut and partially assembled by RDRN volunteer Jim Allen.

ANNOUNCEMENTS

TOXIC SUBSTANCES LIST

The federal government, under the new Canadian Environmental Protection Act, is now starting to assess the danger of 44 substances (including chemical families) for control through legistlation. This is only the first step in a long process to codntrol hazardous chemicals in the Canadian environment. Ironically, dioxins and furans are on the top of the priority list for regulation. These are the chemicals produced from the antiquated chlorine bleaching process that the government has approved for two of Alberta's new pulp and paper mills.

ADOPTIVE PARENTS NEEDED

Would you be interest in "adopting" a patient at the Medicine River Wildlife Rehab. Centre? For a sponsorship fee of only $20.00-$75.00, you will help save a wild creature and your contribution will entitle you to the following: a certificate with a picture of the patient, a card outlining both the patient's history and other information about that species, a tax- deductible receipt and a special invitation to attend the animal's release back into the wild!

If you would like more information on this worthwhile program, contact Carol Kelly at Box 115, Spruceview, Alta. T0M 1V0 (Phone 728-3467).

Flowing to the Future

Alberta's Rivers Conference May 11, 12, 13, 1989.

In cooperation with over thirty organizations and agencies from around the province, the University of Calgary is hosting a major rivers conference:

Flowing to the Future - celebrating Alberta's rivers and examining the issues that will affect their future.

This three day conference will focus on the evironmental, economic, recreational and cultural issues associated with rivers through lectures, panel sessions and workshops. A wine and cheese reception will be held the evening prior to the conference.

On day one, May 11, the various themes will be addressed through keynote lectures. The day will culminate in a voyageur canoe float trip and outdoor celebrations.

Day two, May 12, is broken into three elective streams concerning three geographic regions of Alberta - Southern, Central and Northern. Panel sessions, State of the Rivers Reports and Workshops inform and involve the participant with the specific problems and concerns of each region. An evening banquet presentation will end the day.

The conference will wrap-up on May 13. Day three is comprised of three elective presentations, workshop summaries and conference summary.

Speakers

"Rivers that Run in the Mind" - Bob Scammell, well known Alberta outdoors writer and conservationist. Sponsored by Alberta Fish and Game Association.

"River Conservation in Canada" - Ed Struzik, award winning journalist, whitewater paddler and adventurer.

"River Conservation in the United States - Two Decades of Victories" - Tim Palmer, author of five books on America's rivers including the acclaimed Endangered Rivers and the Conservation Movement.

"Multi-purpose Management of Alberta's Rivers" - Peter Melnychuk, assistant Deputy Minister, Water Resource Management, Alberta Environment.

State of the Rivers Reports

Grassroots reviews of the history, current uses and future prospects of rivers throughout Alberta - sponsored by the Mountain Equipment Co-op.

Milk River	Cleve Wershler
Oldman, St. Mary's and Waterton Rivers	Stewart Rood
Bow and Highwood Rivers	Jim McLennan and Dave Soltess
Red Deer River	Red Deer River Naturalists
North Raven River	Bob Scammell
Brazeau River	Glenda Hanna
Maligne River	Ben Gadd
Little Smokey River	Darryl Smith
Peace River	Wayne Norstrom
Slave River	Jacques van Pelt

Panel and Workshops

Experts on heritage rivers, irrigation water management, industrial water use, municipal water supply, fish and wildlife, forest management and other areas of concern will discuss river management issues. The same experts will participate in audience workshops to develop strategies and options for the future of Alberta's rivers.

For more information: Flowing to the Future, Faculty of Continuing Education, The University of Calgary, 2500 University Drive, N.W., Calgary, Alberta T2N 1N4, (403) 220-6752.

Registration is $105.00 before April 10th, $125.00 after April 10th. (includes banquet).

The Canadian Wildlife and Wilderness Art Museum

Plans for the establishment in Ottawa of a wildlife art museum of international stature, to be known as the Canadian Wildlife and Wilderness Art Museum, are being finalized. The museum will house a collection of works by recognized Canadian artists. It will collect the work of upcoming artists to encourage their development. A further collection of works by artists from other countries will be included which will act as a stimulant to national work. A gallery of Native and Inuit art will be an important feature.

The museum will organize seminars, workshops and special interest tours with recognized artists as guest lecturers and participants.

Two annual exhibitions will be held to show the latest and best works in painting, drawing, printmaking, photography, sculpture, decoy and animal woodcarvings. An ongoing travelling exhibit program will be offered to other museums. The museum is currently organizing its first European travelling exhibition with two prominent Canadain museums.

A secondary role of the museum will be the furtherance of environmental awareness and funds from any profits of the museum's activities will be forwarded to selected causes.

Funding for the museum is being carried out by its own foundation, which has been designed as a non-profit, tax exempt charitable organization, whose registration number is 0759407-50-10.

The museum welcomes inquiries from groups, individuals, and or artists by writing: Martin Green, Executive Director, Canadian Wildlife and Wilderness Art Museum, 150 MacLaren Street, Ottawa, Ontario, Canada. K2P 0L2.

Continued from page 5.

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COMMENT

Making a Difference

Brent Skidmore

During this age when everyone and every group seems to be grasping at you to support their cause it can be confusing and even upsetting making a decision as to whom to support. Financially and mentally the average person can only spread themselves so thin. I have donated a few dollars and many hours to enough groups, signed enough petitions and penned enough letters to politicians to have a somewhat clear conscience that I am not being an apathetic bystander. Still, I've never felt comfortable with my sporadic contributions nor been satisfied that my efforts have been worth a darn. Fresh experience lobbying against the Oldman River Dam project has only fueled this latter concern.

The fact that I have been primarily drawn to supporting environmental causes while remaining a consummate consumer adds a further dilemma to my doubts. How can I justly preach "save the environment" when I am unwilling, or for various reasons, unable, to sacrifice my automobiles, tapes and records, plastic kayaks, photography and convenient chemically maintained groceries?

Never rich, I sent WWF $50 (VISA no less and tax deductible). I now "own" two acres of tropical rainforest in Costa Rica. (Co-workers once teased me that I had been taken for a ride and asked if I was going to buy the Manhattan Bridge next. Knowing that their idea of nature is a golf course erases any sting from their remarks.) Now, on days when the breeze is particularly refreshing, I like to imagine that the air I breathe in is from that forest. It gives me some hope for the world my own children are inheriting. Perhaps one day we can visit this forest reserve and get a chance to see some of the extraordinary plants and wildlife preserved there.

I am still wrestling with the contradiction of my consumerism. Hopefully there will be campaigns similar to this World Wildlife project and the next product I purchase will be three acres of North American wetlands or an acre of virgin forest.

Continued from page 29.

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Author's Address:
Canadian Wildlife Service, 4999 - 98 Ave.,
Edmonton, Alberta T6B 2X3.

A Recent Record of American Avocet in the Northwest Territories

American Avocet (Photo: courtesy of Karvonen Films)

Ernie Kuyt

The American Avocet is most often seen in Canada in sloughs and shallow lakes of the prairies and aspen parkland. This typical prairie shorebird formerly occurred much further north than present records indicate. Godfrey (1986) indicates that specimens were taken in the nineteenth century at Rae and Fort Resolution on the north and south shores of Great Slave Lake, Northwest Territories and he refers to an 1861 breeding record from Rae. In Alberta, specimens have been taken as far north as Fort Chipewyan and Lesser Slave Lake, and breeding records are available from Beaverhill Lake and Lesser Slave Lake (Godfrey, 1986).

More recently, sightings of American Avocets north of their prairie habitat in Alberta were made by Gulley (1983) who summarized avocet observations he made between 2 May 1977 and 29 May 1982 about 30 km north of Fort McMurray, Alberta. Gulley saw a pair of birds in early May 1977 and in late May 1982, and flocks of seven and eight birds repectively from 8 May - 24 June 1980 and from 28 April - 6 May 1981.

On 16 May 1988 in Fort Smith, NWT, Mr. A. Hall, a local resident, naturalist and wilderness guide contacted me to advise he had seen a flock of 12 avocets. The observation was made in the Fox Holes, a vast expanse of wet sedge meadows, shallow ponds and lakes about 35 km northwest of

Fort Smith. The wetlands are surrounded by dry grass and sedge meadows and isolated clumps of willows, swamp birch, aspen and white and black spruce. The area is highly prized by birders, particularly in spring, and waterfowl hunters in fall.

Many prairie-nesting species such as Mallard, Pintail, Green- and Blue-winged Teal, American Wigeon, Northern Shoveler, American Bittern, Sora, American Coot, Common Snipe, Lesser Yellowlegs, California Gull and Red-winged Blackbird are routinely observed in the Fox Holes. Another prairie bird, the Wilson's Phalarope was recently discovered nesting in the Fox Holes (Pankratz and Kuyt, 1986).

On 17 May I visited the Fox Holes and observed almost all of the above species as well as migrating Black-bellied and Golden Plover, Pectoral Sandpiper, dowitchers, Lapland Longspur and Horned Lark. Of particular interest was a flock of eight Wilson's Phalarope, composed of both sexes as well as a separate pair (male and female) of these phalaropes in the same area where Pankratz (Pankratz and Kuyt, 1986) found several nests in 1984.

In the shallow water of a large pond I spotted a single American Avocet, belly-deep in the water. I thought at first the non-moving bird was dead but as I approached, the avocet began sweeping its upturned bill from side to side in characteristic feeding behaviour. Shortly thereafter the bird flew a short distance west and landed on the far shore of the same lake. Here it briefly joined another avocet I had not seen earlier. After feeding for a few minutes the birds took off separately, flew several hundred metres northwest and landed amongst tall marsh vegetation where I could no longer see them from my original vantage point.

It is known (Pospahala _et_ _al_. 1974; Smith 1970) that waterfowl may bypass the drought-stricken prairie breeding range and nest in more northern areas. Rod Drewien (_Pers_. _commun_.) mentioned to me that in June 1988 while engaged in waterfowl studies on the Kent Peninsula 750 km northeast of Yellowknife, NWT, he saw several thousand Pintail in large, apparently nonbreeding flocks. These birds and those I saw in the Fox Holes this spring may well have failed to breed in view of unfavourable habitat conditions further south.

Do prairie shorebirds exhibit the same behaviour during dry conditions of nest habitat? The May Pond Index (an expression of the number of water areas present in the prairie potrhole region and therefore an indicator to waterfowl production) for 1977, 1980, 1981 and 1982 when all of Gulley's (1983) observations were made, as well as for 1988 (present avocet sightings) was well below the 1961-1988 average (USFWS-CWS 1988 status of waterfowl and fall flight forecasts, 37 pp.) The number of May ponds in prairie Canada for 1977, 1980, 1981 and 1988 were the lowest four on record since 1968. The largest number of avocets (seven in 1980, eight in 1981, 12 in 1988) discussed in this paper were observed in northern areas during the three driest years in prairie Canada since 1968.

Much more information is required before we can state conclusively that shorebirds continue northward migration when prairie nesting areas dry up. Bird observers in northern areas should be aware that there might be an unexpected bonus in the form of unusual sightings when the Canadian prairies are dry.

I thank Loney Dickson, B. Turner and P. Pryor (Canadian Wildlife Service for providing useful records and advice.

Continued on page 27.

Addenda to the 1985 and 1986 May Species Counts—Plants in Flower

J. Derek Johnson

It is said, "Better late than never", and I suppose for the sake of completeness that holds true here as well. I recently received from Rob Gardner in Medicine Hat lists of plants in flower on the May Species Count weekends in 1985 and 1986. The 1985 list included 42 species, and the 1986 list 37 species in flower. From the 1985 list there are 5 additions to the total number of plants seen in flower for that year. These are: *Rosa askansana* (Prairie Rose), *Lupinus argenteus* (Silvery Lupine), *Melilotus officinalis* (Yellow Sweet Clover), *Opuntia polyacantha* (Prickly-pear Cactus), and *Lappula squarrosa* (Bluebur). Hope Johnson (pers. comm.) comments that the Medicine Hat population of Silvery Lupine may have become established from plants transplanted from the Cypress Hills where the species is relatively common. Silvery Lupine does not appear to occur naturally as far north as Medicine Hat (Moss 1983). The above additions raise the total number of species seen in flower in 1985 to 290 and the number of participants to 40.

Ten additions are made to the 1986 count. These are: *Eriogonum flavum* (Yellow Umbrella-plant), *Brassica kaber* (Wild Mustard), *Rosa arkansana* (Prairie Rose), *Astragalus lotiflorus* (Low Milk-vetch), *A. spatulatus* (Tufted Milk-vetch), *Lupinus argenteus* (Silvery Lupine), *Lonicera dioica* (Twining Honeysuckle), *Achillea millefolium* (Common Yarrow), *Heterotheca villosa* (Golden Aster), and *Tragopogon dubius* (Yellow Goat's-beard). Low Milk-vetch is a rare vascular plant in Alberta (Packer and Bradley 1984), occurring on dry prairie in the southeastern portion of the province (Moss 1983). Hope Johnson (pers. comm.) gives the locality for this record as "cliffs above the South Saskatchewan River west of Redcliff." Previous reports of the species have come from the Lethbridge area. With these 10 additions, the total number of species seen in flower in 1986 is 268 and the number of participants is 64.

Acknowledgement

I would like to thank Hope Johnson for providing me with locality information and comments on the identification of some of the species in the above listing.

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Author's Address:
Northern Forestry Centre, 5320 - 122 Street,
Edmonton, Alberta T6H 3S5.

F.A.N. NEWS

Federation of Alberta Naturalists
Directors Meeting May 14, 1989

Where: Univeristy of Calgary,
Social Sciences Bldg. Rm. 202
When: 9 am
Agenda:
1. Federal Forestry Policy
2. Sunshine Ski Resort Expansion Plan

Lunch will be at a local restaurant

Uncommon Plants from Ram Mountain, Alberta

J. Derek Johnson

In an earlier article (Johnson 1988) I related some observations from my master's thesis study of summer food habits of bighorn sheep on Ram Mountain, southeast of Nordegg. As was mentioned in that article, part of the study also involved plant community analyses. Several plants found during this part of the study are of special interest, either because they have been rarely collected in Alberta or they represent a geographic extreme of the known range for the species. A number are arctic species with a disjunct distribution in Alberta. Distribution information for this discussion has been obtained from Moss (1983), Packer and Bradley (1984), Porsild and Cody (1980), Scoggan (1979), and the herbaria at the University of Alberta (ALTA), the University of Calgary (UAC), and the Northern Forestry Centre (CAFB). Scientific nomenclature follows Moss (1983); most common names have been taken from Looman and Best (1979). Voucher specimens are deposited in UAC.

Plants included in this uncommon group are Alpine Spring Beauty (_Claytonia megarhiza_), Dwarf Fleabane (_Erigeron radicatus_), Northern Bladderpod (_Lesquerella arctica_), Flame-colored Lousewort (_Pedicularis flammea_), Arctic Wintergreen (_Pyrola grandiflora_), Dwarf Buttercup (_Ranunculus grayi_), Lapland Rose-bay (_Rhododendron lapponicum_), Alaska Willow (_Salix alaxensis_), Spider Plant (_Saxifraga flagellaris_), Silver Rock Cress (_Smelowskia calycina_), and Rose-root (_Tolmachevia integrifolia_). All occurred either at the upper limits of subalpine vegetation, or in rocky alpine meadows, or on talus slopes, from elevations of 1880 to 2100 m. Four of these species are included in the most recent list of rare vascular plants in Alberta (Packer and Bradley 1984); two others were included in the first list of rare vascular plants published for the province (Argus and White 1978).

The occurrence of Alpine Spring Beauty and Rose-root on Ram Mountain represents the northernmost distributional record in the province for both species. Plants of Alpine Spring Beauty were observed on a talus slope west of the fire lookout. The main distribution of the species is in the mountains, from Nevada north to southwestern Alberta (Moss 1983), but there are a few widely disjunct localities in the Mackenzie Mountains of the Northwest Territories (Porsild and Cody 1980). Rose-root occurred in rocky alpine habitats and was more common than the former species. It is found commonly in Alaska, the Yukon Territory, the western District of Mackenzie, and southward in the mountains from southwestern Alberta to California and Nevada (Moss 1983). There is, however, a large gap in the distribution between southwestern Alberta and the southern Yukon Territory (Porsild and Cody 1980).

Dwarf Fleabane is a rare vascular plant in Alberta and has a very restricted distribution in Canada, occurring only in Alberta and southwestern Saskatchwewan (Packer and Bradley 1984). There are seven known localities in

Alberta and three in Saskatchewan (Moss 1983; Scoggan 1979). It is a species with a broad elevational tolerance, growing on fairly dry, open slopes from prairie to alpine elevations (Moss 1983). Two collections from Jasper National Park are the only ones of this species from north of the Ram Mountain area.

Northern Bladderpod is also a rare vascular plant in Alberta; there are five known localities (Packer and Bradley 1984; Porsild and Cody 1980). It is primarily an arctic-alpine species with a far northern distribution, occurring on gravelly slopes and ridges (Moss 1983). In western North America there are only three collections from areas south of Ram Mountain (Packer and Bradley 1984; Porsild and Cody 1980).

The first collection of Flame-colored Lousewort in Alberta was not made until 1959 in Banff National Park. Since that time it has been found in more than 20 localities in the mountains, from Mt. Allen in the south to Willmore Wilderness Provincial Park in the north. The species is normally found on calcareous alpine slopes (Moss 1983). Its occurrence in Alberta represents a wide disjunction from the main range of the species in the central and eastern arctic (Moss 1983). It was listed as a rare vascular plant in Alberta by Argus and White (1978).

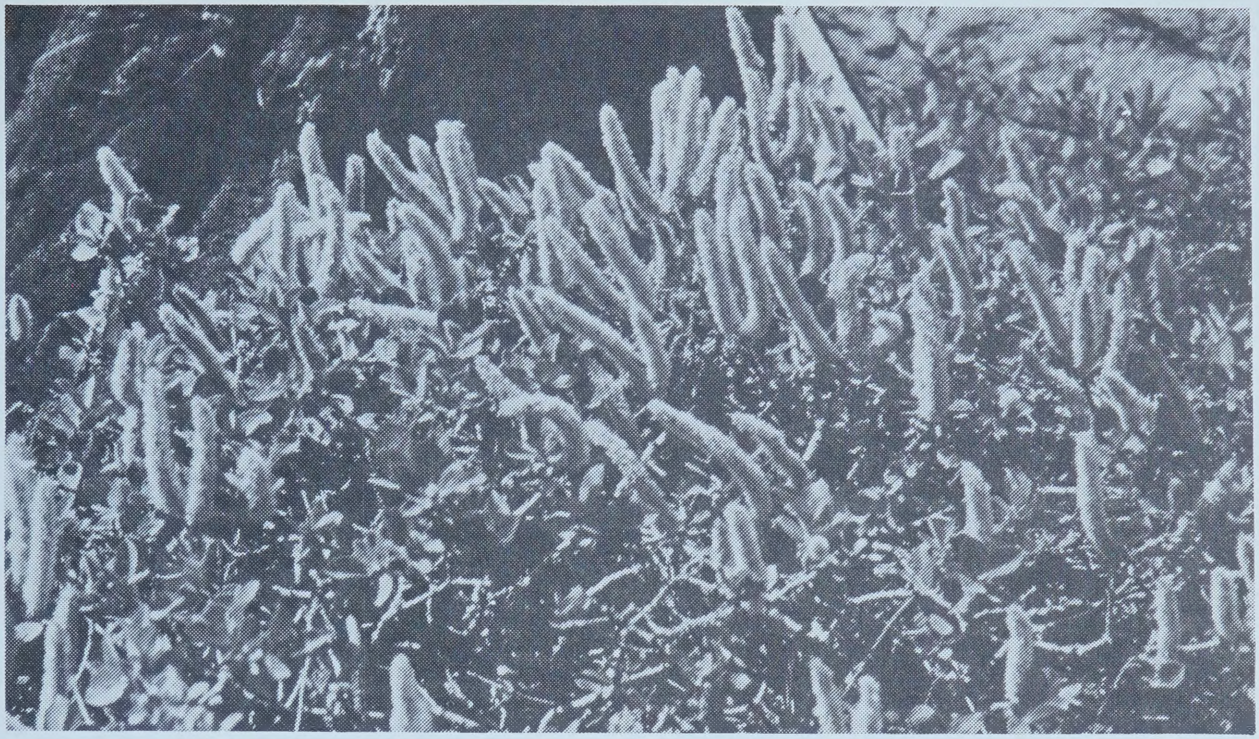
With the exceptions of Wilcox Pass in Jasper National Park and the upper Bow River valley in Banff National Park, the collection of Arctic Wintergreen from Ram Mountain represents the southernmost record for the province. A primarily arctic-alpine species, southwestern Alberta is the southern limit of its distribution (Moss 1983). Sparsely vegetated tundra is its typical habitat (Porsild and Cody 1980).

Localities for Dwarf Buttercup in Alberta are distributed from near Grande Cache in the north to Highwood Pass in the south (Moss 1983). A western North American species of dry, rocky alpine slopes, it occurs in Alaska, the Yukon Territory, western District of Mackenzie, British Columbia, Alberta, and south to Colorado (Moss 1983). Similar to that of Rose-root, there is a large gap in the distribution between southwestern Alberta and southwestern District of Mackenzie (Porsild and Cody 1980).

Collections of Lapland Rose-bay have come from a relatively narrow band in western Alberta and not from the extreme north of the province where it was first expected. All collections are roughly from an area between 52° and 53° N and 116° and 118° W, slightly south of Ram Mountain west to the vicinity of Jasper (Moss 1983). Alberta represents a southern limit for this arctic-alpine species of rocky tundra (Porsild and Cody 1980). It is rare in the province (Packer and Bradley 1984).

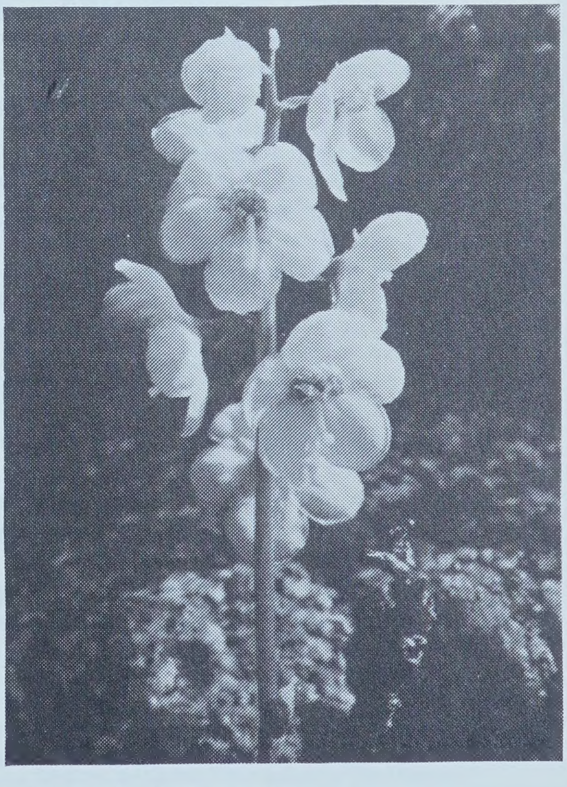
Alaska Willow is the fourth of the rare vascular plants included in Packer and Bradley's (1984) list. A thicket-forming arctic-alpine species, it reaches the southern limit of its distribution along the Red Deer River in western Alberta (Moss 1983). Ram Mountain is one of five Alberta localities indicated for the species by Packer and Bradley (1984), the northernmost of which are along the Athabasca River in Jasper National Park.

Spider Plant is not considered a rare species in Alberta by Packer and Bradley (1984), but it is by Argus and White (1978), with only six localities indicated for it in the Flora of Alberta (Moss 1983). Other known localities besides Ram Mountain range from the Sunshine Valley area of Banff National Park in the south to Eaglesnest Creek in Willmore Wilderness Provincial Park in the



Alaska Willow (_Salix_ _alaxensis_). (Photos: J.D. Johnson)

Silver Rock Cress
(_Smelowskia_ _calycina_).



Arctic Wintergreen
(_Pyrola_ _grandiflora_).

north (Moss 1983). Often found on bare patches of moist, gravelly limestone, the species has a circumpolar arctic-alpine distribution with Alberta representing the southern limit of its range in North America (Porsild and Cody 1980).

Silver Rock Cress is the most common of the species included in this listing (Moss 1983), but its occurrence on Ram Mountain is no less representative of a species near an extreme of its geographic range than any of the others included in the list. A species of alpine ridges and talus slopes, its distribution is from northern Alaska, the Yukon Territory, and western District of Mackenzie, south to Nevada, Utah, and Colorado (Moss 1983). Again, there is a large gap in the distribution between southwestern Alberta and the southern District of Makenzie (Packer and Vitt 1974). With the exceptions of collections from Mountain Park and Jasper National Park, that from Ram Mountain is the most northerly for the province (Moss 1983).

Part of the explanation for the interesting nature of Ram Mountain in terms of its flora may lie in its history during the most recent glacial period when the area appears not to have been glaciated (Reeves 1973). The area could have served as a refugium or nunatak for the in situ survival of some of these unique plant species, similar to what has been suggested to have occurred at Mountain Park and in other areas of the Rocky Mountain front ranges (Packer and Vitt 1974). A number of species in the foregoing list occur in areas for which there is some evidence of refugial status.

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Author's Address:
Northern Forestry Centre, 5320 - 122 Street, Edmonton, Alberta T6H 3S5.

Mystery Beast. Can anyone identify these tracks near Medicine Hat? Let Rob Gardner know: 548 - 11 St. S.E., Medicine Hat, Alberta T1A 1T3.

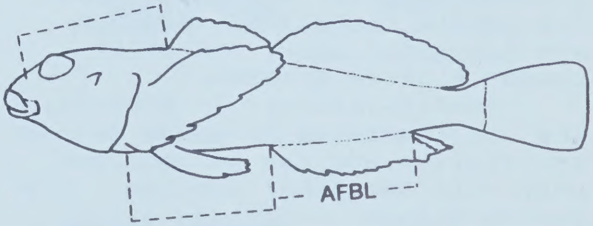
The Sculpins of Alberta—Addendum

Wayne Roberts

Ed. Note: The following description of the zoogeography and distinguishing characteristic data for the Shorthead Sculpin was inadvertently deleted from the article on The Sculpins of Alberta. Alta. Nat. Vol. 18(4). The first and last sentence of the short addendum below are repeated from the original article. Also missing from that article was an acknowledgement of the artist, Annemarie Mobach, who prepared the excellent diagrams in Figure 3.

The Shorthead Sculpin-The only populations of the Shorthead Sculpin known to occur east of the continental divide are in Montana and Alberta. This species may have crossed the continental divide from the North Fork Flathead River into the upper St. Mary River in Montana. The population in the Milk River may be recently derived from the St. Mary River via the diversion canal in northern Montana. This species was regarded as endangered by Penden and Hughes (1984) based on its restricted distribution in the North Fork Flathead River in B.C. While it is now known to occur in the Columbia River in B.C. (UAMZ collection), and in the Milk and St. Mary rivers in Alberta, each of these populations exhibits unique features and should be treated as distinct entities (Peden, Roberts and Hughes-in press). The Alberta populations are unique in that they are the only populations of this species in Canada extending into the prairies.

Differentiation between populations of Shorthead Sculpins and between this species and its close relatives requires some knowledge of character states for morphometric and meristic characters. In addition to the weakly developed palatine dentition, east slope Shorthead Sculpins usually (64%) have two spines on the preoperculum. Occasionally a bump or third spine may be developed. About 90% of the specimens examined have a post-maxillary pore. Papillae are found on the dorsal surface of the head. Fine prickles are found behind the pectoral fins of small individuals. The lateral line has usually 20-25 pores, with occasionally as few as 18 or as many as 27 pores, and is interrupted below the second dorsal fin with additional pores on the caudal peduncle. Meristic data for specimens from the Milk River are given in Table 1.



Shorthead Sculpin

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The European Skipper: New to Alberta

J. Belicek, N. Kondla, T. Kral

The purpose of this note is to report the addition of a new skipper to the known butterfly and skipper fauna of Alberta. The European Skipper (Thymelicus lineola) was first collected in Alberta by Belicek on July 1st, 1987 at Ellerslie near Edmonton. Specimens remained unidentified until July 1988 when a visiting lepidopterist (Kral) confirmed their identity based on his familiarity with this species from field work in Eastern North America. Additional specimens were collected on July 28 and 29, 1988 at the original location near U of A Experimental Farm at Ellerslie.

Habitat: The Alberta specimens were collected in grassy road ditches supporting patches of Phleum pratense, Bromus inermis, Deschampia caespitosa, Poa spp., and Agropyron spp., and other common Alberta grasses.

Identification: In Alberta, the adults of the European Skipper are similar and can be confused only with two other species - the Garita Skipper - Oarisma garita and the Delaware Skipper - Atrytone logan. With an overall wing span of ca. 26-27mm, its diagnostic characteristic is the color and maculation of the wings. The dorsal surface is burnt orange with a brassy metallic sheen (characteristic) with a narrow black border. The distal portion of wing veins is accented with black scales. Males have a narrow black line (stigma) on the upper fore-wings. In comparison, the specimens of the Garita Skipper have a relatively lot of dark brown scales on the dorsal surface of the wings. The specimens of the Delaware Skipper differ by a black base of the forewing on the underside.

It is not know when this Eurasian species was first introduced to North America. It was first reported on the N. American continent by Saunders (1916), based on specimens collected in 1910 at London, Ontario. Burns (1966) documented the spread of this species in North America. He reported the range expansion as being "initially unspectacular" but that it had "accelerated markedly" in the fifteen years prior to 1966. At that time he reported occurrence of this species in seven eastern U.S. states as well as three Canadian provinces. Of note was a report of an isolated colony from Terrace, British Columbia. Burns (1966) suggested that this may represent an independent introduction on the West Coast. Shepard (1982) reported additional records closer to Alberta near Sicamous (B.C.) and vininity.

According to Gregory (1983) and Opler and Krizek (1984) in less than twenty years the range extended across 23 eastern U.S. states and eight Canadian provinces. Scott (1986) reported the addition of Colorado to the distribution range. Preston and Westwood (1981) reported that first specimens of this species were found in Manitoba in 1972. Royer (1988) reported occurrence in North Dakota.

The most likely reasons for the successful dispersal and colonization is given by Burns (1966). The dispersal of small organisms is frequently aided by human activities. The European

Skipper is particularly well suited to capitalize on such assistance due to its choice of larval food plant and peculiar development in the early stages. In Alberta, the primary food plant is probably Timothy grass (Phleum pratense). This grass is widely grown in N. America and often transported as hay for agricultural purposes. But the most significant factor may be that the first instar larva overwinters within the egg shell until the following spring - (it hatches about 8 to 10 months after the eggs were laid on the host grasses). The eggs, as Burns puts it, "are virtually self-sufficient, protected, compact, sessile and durable". Thus, the egg is an extrememly well-designed container for widespread hitchhiking in bales of hay.

Since it is expected that this species will further spread in the province, naturalists are asked to contact Norbert Kondla at 6415-95 Avenue, Edmonton (phone 468-4811) with information on any new locations. Norbert is mapping the distribution of Alberta butterflies and skippers in an ongoing research project. At least one voucher specimen from each new locality would be helpful from those who have no philosophical or ethical objection to killing insects.

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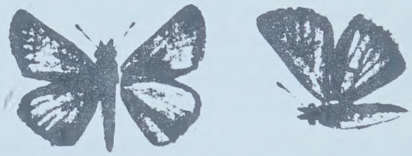
Authors' Addresses:
Joseph Belicek, 15004 - 96 Avenue, Edmonton, Alberta T5P 4M7.
Norbert Kondla, 6415 - 95 Avenue, Edmonton, Alberta T6B 1A6.
Tom W. Kral, 6600 N. Galaxy Road, Tuscon, Arizona 85741.



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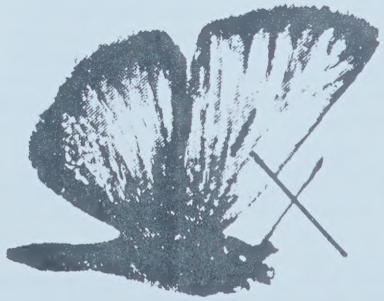

European Skipper:
(Sketch supplied by: Tom Webb)

Recent Publications on Alberta Natural History

Compiled by David M. Ealey, Martin K. McNicholl, and Don Albright

Natural History of Alberta

The following papers were part of a major symposium entitled: Rubec, C.D.A. and R.P. Overend. (compilers). 1988. Proceedings Symposium '87 Wetlands/Peatlands. Edmonton Convention Centre, Edmonton, Alberta, August 1987. 704 pp.

Turchenek, L.W. and A.E. Howard. 1988. Organic soil temperature regimes in central Alberta. pp. 53-60.

Young, D.A. 1988. Petroleum extraction and waterfowl utilization within a major wetland complex - are they compatible? p. 165-171.

Sankowski, T.P., K.L.Schmitt, S.J. Guinn, G.R. Stewart and R.B. Burns. 1988. The Kitsim complex, an example of a small wetland development benefitting waterfowl and cattle production. pp. 189-194.

Rothwell, R.L. and V.J. Lieffers. 1988. Preliminary assessment of air temperatures near the ground on a drained and undrained peatland in central Alberta. pp. 195-201.

Kent, R.L. 1988. Wetlands wastewater treatment - Blue Quills School, St. Paul, Alberta. pp. 233-240.

Hillman, G.R. 1988. Improving wetlands for forestry in Alberta. pp. 241-248.

Young, D.A. 1988. Development of water management plans to protect wildlife resources during agricultural drainage. pp. 325-331.

Palylyk, C.L., P.H. Crown, and L.W. Turchenek. 1988. LANDSAT MSS data for peatland inventory in Alberta. pp. 365-371.

Kerr, D.S. and D.A. Young. 1988. Farmland assessment sheets as a potential source of wetland inventory information. pp. 423-425.

Harkonen, K. 1988. Classifying peatland for forest drainage and growth in Alberta. pp. 465-472.

Zoltai, S.C. and J.D. Johnson. 1988. Relationships between nutrients and vegetation in peatlands of the prairie provinces. pp. 535-542.

Griffiths, D.E. and G.H. Townsend. 1988. Northern deltas - oases for wildlife. pp. 551-557.

Jones, A.M. 1988. Development of national wetland conservation programs. pp. 591-598.

Fuller, G.A. 1988. Agricultural drainage policy on the prairies. pp. 631-635.

Hirvonen, H. and N. Lopoukhine. 1988. Wetlands and resource management within Canada's National Parks system. pp. 647-655.

Griffiths, D.E. 1988. Strathcona County wetlands -the wildlife resource, its conservation, and potential for interpretation. pp. 677-684.

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Part 2 of Recent Publications to follow in the summer edition of the *Alberta Naturalist*

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- *(a) To encourage among all Albertans, by all means possible, an increase in their knowledge of natural history and understanding of ecological processes;*
- *(b) To promote an increase in the exchange of information and views between natural history clubs and societies in Alberta;*
- *(c) To foster and assist in the formation of additional natural history clubs and societies in Alberta;*
- *(d) To promote the establishment of natural areas and nature reserves, to conserve and protect species communities or other features of interest;*
- *(e) To organize, or coordinate, symposia, conferences, field meetings, nature camps, research, and oth activities whether of a similar or dissimilar nature;*
- *(f) To provide the naturalists of Alberta with a forum in which questions relating to the conservation of the natural environment may be discussed so that united positions can be developed on them, and to provide the means of translating these positions into appropriate actions.*

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DEADLINES for F.A.N. project reports are:

Alberta Christmas Bird Counts, January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB T2V 4H2

May Species Count—Plants, July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB T6H 3S5; —*Birds and Mammals*, July 15, Don Stiles, 20 Lake Wapta Rise S.E., Calgary, AB T2J 2M9

Compiler cooperation is greatly appreciated.

LETTERS TO THE EDITOR

A Proposal for Establishing a Comprehensive Widespread Inventory of Fauna and Flora

Dear Editor,

I believe that naturalists and publications such as the Alberta Naturalist can play an increasingly important role in ensuring that valuable data are readily available to assess changes in our fauna and flora. This proposal would involve co-ordination and the systematic collection of data on species to document the "what-where-when" for certain designated sites and along transects – and expansion of some on-going projects being done by individuals, volunteer groups, and governments. The extent of existing inventories should also be documented. Without proper baseline data over time we are unable to document change or to have a rational basis for identifying "cause-and-effect" in order to react to the change.

Detailed and regular documentation using microscopes to aerial photographs is required for major ecological areas. Non-impact collecting with identifications made in museums would be required for many groups. At study sites there would be quantified inventories of as many species as possible. Less detailed but regular observations would occur wherever there was the interest. The time is past when we can be content with one-time studies. I am not downplaying the value of such past studies or the pleasure derived from making isolated observations but am urging that there be a vast increase in monitoring and publication of the data for scrutiny.

Such a program would involve an enormous workload – clearly beyond what government agencies appear capable of doing. Yet, it would need government assistance. At the same time there must be accountable but independent people involved in data interpretation and release. Such people must be free to give opinions on the data and the data must be free for all to interpret independently – no oath of secrecy can be taken by the people involved here, it's much too important! To provide adequate resources (human, financial, and material) it would be essential to have a volunteer program with the involvement of government, museums, and societies. I wish we had long-term data on the Wapiti River – is there anything so wrong with having information to decide our future actions? We have concerns about whether fish are safe to eat but what about the fish themselves, how have they and their food items fared?

The volunteers for this mammoth undertaking must be trained naturalists – keen on making identifications, quantifiable observations, and interpretations over a long period of time. You the reader and natural history organizations could do it, and FAN could be a co-ordinating group for Alberta. Can we start on a pilot scale?

Please think about this proposal. Do we need focussed, comprehensive, long-term, and wide-scale studies? If you think so, bring it up at your natural history club meeting.

Joseph S. Nelson, Department of Zoology,
Universirty of Alberta, Edmonton, Alberta
T6G 2E9.

PRESIDENT'S PAGE

Robert Gardner

While growing up in southern Alberta, I always thought of northern Alberta as a vast wilderness. I pictured the muskeg stretching into the distance, unblemished by roads, and only rarely disturbed by bush planes.

Times change. Annoucements last year by the Alberta Forest Service brought me back in touch with reality! My boyhood image was, and still is, accurate. However, our government has a different dream - they see pulp and saw mills using this reservoir of trees to bring economic prosperity to Alberta.

The fact that this area already supports a rich variety of wild animals and smaller plants does not seem to have been noticed by the developers. They simplistically state that the logging will simulate the forest fires that have burned through the area until recently.

On the other hand, the Federation has been caught with no policy suggesting how we ought to deal with projects of this scope. The Directors are now drafting this, but your input is needed. Please call me (529-5295 res, 529-6225 bus) with your comments as soon as possible.

At this time, the policy is based on the World Conservation Strategy. This internationally-accepted document coined the term "sustainable development". This means that the world is available for human use, with three critical restrictions:

1. natural ecological processes must

Rob Gardner President of F.A.N. and **Barb Levesque** co-ordinator of the **Poster Contest**
(Photo: P. Clayton)

continue

2. natural genetic diversity must be maintained

3. any economic development must be sustainable.

Do you feel this is appropriate for us to endorse? Is it too mercenary? How can we include the forest's intrinsic value which has not been taken into account?

The other key point which I need guidance about is the Federation's view of the future of northern Alberta. For too many years we have been complaining about specific developments, but have not presented any concrete alternatives. What do we want this area to look like in twenty years? Only when this vision is fairly well defined will we be able to say whether or not a project helps achieve it.

Some people have questioned whether this is even within our mandate. I feel strongly that it is. We, as naturalists, understand the value of habitat to both wildlife and people. I think we must share this knowledge with others before dangerous mistakes are made. Do you agree?

Once again, please contact me or any other Director to voice your opinion. Thanks for your support, and I hope to see you caving on July 22.

New Directors

I'm pleased to introduce several new directors. Our representation in northern Alberta is especially exciting. If you have any questions or comments about the Federation, please give them a call. They all want to hear your ideas!

Ruth Kleinbub, Appointed Director

Ruth grew up in Guelph, Ontario, where she helped gather dates and specimens (ask her about wolf scats!) for the School of Wildlife Management. However, when she moved to Fort McMurray six years ago, the vast open space was inspirational. She brings to the group the energy of a small town, and enthusiasm sparked by her children.

The recent surprise announcement of an urban park system in Fort McMurray has sparked interest in a naturalist club. Ruth is FANning this, and soon the group will take off like wildfire. If you have suggestions about urban parks, call Ruth at 791-2736.

Tony Graham, Appointed Director

Although Tony participates in the Bird Atlas project, he considers himself an all-round naturalist. He has always lived in Grande Prairie, where he enjoys backpacking. The Two Lakes area of Kakwa Wilderness Area is a favourite destination.

Tony is deeply concerned about our environment, and is willing to make the effort to make his views known. Call him about your concerns, particularly relating to forests, at 532-3260

Bob Greggs, Calgary Field Naturalists Society

Bob studied geology, then taught at Queen's University for a number of years. His specialty was conodonts, tiny fossil teeth whose owners were unknown until 1979. Now, he is a consultant promoting new ideas on the geological structure of Alberta.

Bob got involved with the Federation to learn more about Alberta's natural history and to find new places to watch birds. His extensive contacts will open doors for us, and he promises to broaden our horizons with geological articles for the AN. Phone him at 247-4130 to suggest topics.

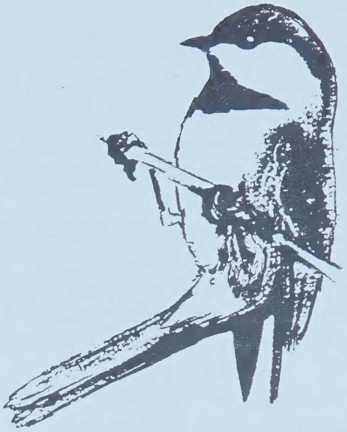
The Song of the Boreal Chickadee

Otto Hohn

Popular field identification bird guides eg. Peterson's "A Field Guide to Western Birds" (2nd Ed.), and the Audubon and the National Geographical societies' guides do not describe the song, as opposed to the call, of the Boreal Chickadee. Chandler, Robins, Brun and Zim's "Birds of North America (1966)", goes so far as to state that this species has no whistled song, nor is the song mentioned in the revised edition of Godfrey's "Birds of Canada".

Yet, "The Birds of Alberta" by Salt and Salt (1976) correctly states that "in March they start to sing - a clear pleasant trill quite unlike the Black-cap's spring song". The song of the boreal species is mentioned as early as 1946 in Bent's "Life Histories of North American Jays, Crows and Titmice" Part 2 where most of p. 382 of the account of the Acadian subspecies (of what was then called the Hudsonian Chickadee) is devoted to the matter of its calls and song, citing one observer's report of the song, heard in 1905 as "a low, burbling, warbling song, which I vainly described in my notes. It began with a pset or tsee followed by a sweet but short warble." The song of the subspecies columbianus is also mentioned in Gabrielson and Lincoln's "Birds of Alaska (1959)" in fairly similar terms.

In the winter of 1984-1985, boreal chickadees were seen more often than in most of my previous winters in Edmonton. On March 15th, 1985 I observed a small flock of these birds in the Whitemud Creek Valley in S.W. Edmonton. Several of them, in addition to the oft described call, repeatedly delivered a short song, which carried further than the calls. I recorded this song as wee tseeep followed by a short but fairly loud trill or warble.



BOREAL CHICKADEE

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Authors Address:
11511 - 78 Avenue, Edmonton, Alberta
T6G 0N4.

Results of the 1988 May Species Count—Plants in Flower

J. Derek Johnson

The following is a summary of the results of the botanical portion of the 1988 May Species Count, held May 28-29. Scientific nomenclature follows Moss (1983); common names have been taken from Looman and Best (1979).

As always, the areas from which reports were received have been listed in approximate latitudinal order from south to north. No count was done in Lethbridge, and the results of the Porcupine Hills count were unavailable at the time of printing. The spring of 1988 was clearly the earliest (and driest!) since regular May Counts began in 1976. Plant development was two to three weeks ahead of average over much of the province, particularly in the southern areas. The weather for the count weekend was much like it was in 1987; Saturday was an enjoyable day to be out, but rainshowers on Sunday afternoon curtailed the enthusiasm of participants in a number of areas.

The 1988 count proved to be the most interesting and unusual one to date. Despite the early spring, the very dry conditions, particularly in the southern portion of the province, kept totals in most areas below record levels. Among regular counts, only Buffalo Lake Narrows, Edmonton, and Hoople Lake set record highs; however, the total number of species seen in flower, the number of participants, and the number of reports and reporting areas set all-time highs. The 29 reports received is three more than the previous provincial re cord. The 17 reporting areas exceeds by one the previous record. The 98 participants is 21 more than the 1983 record of 77. The 400 species barrier was broken for the first time, and the 437 species reported in flower surpass the record of 383 set just last year. The early, dry spring, combined with reports from areas not previously surveyed on May Counts, provided for some rather interesting records.

I thought that the number of grass species reported in flower in 1987 was exceptional, but 1988 was even more so. Thirty-two species were recorded in 1988, which is double last year's record of 16, which was double any previous year's record. Whiskey Gap, Ross Ranch, and Edmonton were the culprits responsible for this vast increase in the number of species. Before this year's count I had my doubts that many species of buttercup (Ranunculus) would be reported in flower because of the extremely dry conditions in the southern part of the province and the preference of many species in the group for moister habitats. I could not have been more wrong. Eleven species were reported throughout the province, tying last year's record, and many of the plants I saw were flowering profusely. With the addition of two new species this year, a total of six species of beardtongue (Penstemon) were recorded in flower across the southern part of the province. This is more than in any previous year. I have to admit to a partiality for this genus; I think it is one of the most attractive groups amongst the spring-flowering plants. Six species of fleabane (Erigeron) were reported in flower, also a record high for the group, and about double what could be expected in an average year. Eight members of the Goosefoot Family were reported in flower, a record high for the family. The violets (Viola) were the only group to show a notable decrease. Five species were reported in flower, but this includes only a single record of the Yellow Prairie Voilet (Viola nuttallii). Most of the other groups were at about the same level as last year.

Although I have no doubts that there were over 400 species found in flower in 1988, I did have problems accepting a number of the records when sorting through the reports. Because of the exceptional conditions in the spring of 1988, normal flowering patterns were disrupted. The heat and drought brought many species into flower much earlier than usual, and their flowering periods were condensed. Conditions were so dry in some areas that some species produced very few flowers. Because of the greatly advanced season and my own observations, I had difficulty accepting flowering records for a number of the earlier-flowering species, particularly some of the sedges, willows, and birches, and to a lesser extent Canada Buffaloberry and the colt's-foot species. Most of what I saw was well past flowering. Add to this the perennial problem of determining the actual identity of some of the reported species. Every year there are species reported that are highly unlikely to be found in that area, but stranger things have happened. A collected specimen would solve the question once and for all, and I would again encourage contributors to send me their problem specimens. After all, part of my job as provincial compiler is to ensure that the results are as accurate as possible, and I am more than willing to take the time to help out with identifications. This will help the regional contributors who do their counts in the same area each year as well, because once the identity of a particular plant is known, there will not be the recurring annual problem of reporting unidentified species or forever wondering just exactly what that plant is.

As far as individual counts go, the provincial high was recorded in the Edmonton count circle with 173 species in flower, surpassing last year's all-time record set by Whiskey Gap of 162. Whiskey Gap came second this year with a total of 154. A count from the Manyberries/Ross Ranch area in southeastern Alberta listed 108 species in flower. The extremely dry conditions in the area, especially on the flat grasslands, resulted in a lower total than might have been expected under more favorable conditions; however, this count was notable in that it added 13 species to the all-time May Count list, including 3 on the rare vascular plants list for Alberta (Packer and Bradley 1984). In spite of its brevity, a visit to the Frank Slide Interpretive Centre managed to add two species to the all-time May Count list, and this out of a total of just 16 species found in flower. In addition to a lengthy tour of the Head-Smashed-In Buffalo Jump Interpretive Centre, which is well worth a visit, a survey of the prairie and roadside areas surrounding the jump turned up many interesting species, including 5 new additions to the May Count list, one of which is also on the rare vascular plants list (Packer and Bradley 1984). Medicine Hat turned up 4 new species for the list, two of them notably early flowering records. The Yamnuska count did not set any records this year, but it did manage to find 3 species to add to the spring- flowering plant checklist. Three species were also added from the Banff count, including a particularly early record for a species of rush. Dry Island Buffalo Jump Provincial Park, Red Deer, and Buffalo Lake each added one species to the all-time list. The new species from the Whiskey Gap, Manyberries/Ross Ranch, Head-Smashed-In Buffalo Jump, Yamnuska, and Banff counts were supported by specimens, as were five of the new records from Edmonton.

I thought we had a good updated checklist of spring- flowering plants in Alberta (Hrapko 1988), but along came the very dry, early spring of 1988 to wreak havoc with normal flowering times and add 51 new species to the all-time May Species Count list. Even three new plant families were added to the list, Amaranthaceae (Amaranth Family), Cappandaceae (Caper Family), and Dipsacaceae (Teasel Family). The number of species reported in flower in 1988 for the first time ever is the most in the last 7 years and includes: Alopecurus pratensis (Meadow Foxtail), Spartina gracilis (Alkali Cord Grass), Carex hoodii (Hood's Sedge), Diplotaxis muralis (Sand Rocket), and Heuchera parvifolia (Small-leaved Alumroot) from Whiskey Gap; Bromus tectorum (Downy Chess), Distichlis stricta (Salt Grass), Poa juncifolia (Alkali Blue Grass), Puccinellia nuttalliana (Nuttall's Salt-meadow Grass), Carex nebraskensis (Nebraska Sedge), Scirpus paludosus (Prairie Bulrush), Sarcobatus vermiculatus (Greasewood), Suaeda moquinii (Tall Sea-blite), Sedum lanceolatum (Lance-leaved Stonecrop), Crepis occidentalis (Small-flowered Hawksbeard), Machaeranthera canescens (Canescent Aster), and M. grindelioides (Toothed Ironplant) from the Manyberries /Ross Ranch area; Eriogonum ovalifolium (Silverplant) and Penstemon ellipticus (Creeping Beardtongue) from the vicinity of the Frank Slide Interpretive Centre; Silene cucubalus (Bladder Campion) from Fort MacLeod; S. menziesii (Menzie's Catchfly), Lepidium ramosissimum (Branched Peppergrass), and Penstemon eriantherus (Crested Beardtongue) from the vicinity of Head-Smashed-In Buffalo Jump; Cleome serrulata (Bee Plant), Chrysothamnus nauseosus (Rabbitbrush), and Lygodesmia juncea (Skeletonweed) from Medicine Hat; Barbarea orthoceras (American Winter Cress) and Potentilla uniflora (One-flowered Cinquefoil) from Yamnuska; Juncus albescens (White Rush) and Petasites vitifolius (Vine-leaved Colt's-foot) from Banff; Setaria viridis (Green Foxtail) from Dry Island Buffalo Jump Provincial Park; Galium triflorum (Sweet- scented Bedstraw) from Red Deer; Chenopodium salinum (Oak-leaved Goosefoot) from Buffalo Lake; Festuca rubra (Red Fescue), F. saximontana (Sheep Fescue), Lolium perenne (Perennial Rye Grass), Phleum pratense (Timothy), Poa interior (Wood Blue Grass), Puccinellia distans (Slender Salt-meadow Grass), Schizachne purpurascens (Purple Oat Grass) (2 reports), Carex interior (Inland Sedge), Amaranthus retroflexus (Red-root Pigweed), Anemone riparia (Tall Anemone), Vicia cracca (Tufted Vetch), Epilobium angustifolium (Fireweed), and Knautia arvensis (Blue Buttons) from the Edmonton count circle; Scirpus microcarpus (Small-fruited Bulrush) from Edmonton and Hoople Lake; Asparagus officinalis (Asparagus) from Ross Ranch and Edmonton; Clematis tangutica (Yellow Clematis) from Medicine Hat and Calgary; Lomatium dissectum (Mountain Wild Parsnip) from Whiskey Gap, Head-Smashed-In Buffalo Jump, and Wind Ridge; and Sanicula marilandica (Snakeroot) from Yamnuska and Edmonton (3 reports).

Nebraska Sedge, Tall Sea- blite, Small-flowered Hawksbeard, and Crested Beardtongue are all on the rare vascular plants list for Alberta (Packer and Bradley 1984). Nebraska Sedge is a species of marshy ground (Moss 1983). It has only been recorded from one site in Alberta, near the Montana border SE of Writing-on- Stone Provincial Park (Packer and Bradley 1984). Southern British Columbia and SE Alberta are the northern extremes of its range (Moss 1983). The collection from the Ross Ranch area along the Milk River is slightly to the east and a bit north of the currently known location. Tall Sea-blite, a species of saline soil (Moss 1983), has been reported from two areas in extreme southern Alberta near the Montana border (Packer and Bradley 1984). The Ross Ranch collection is not too far from one of these.

Prickly-pair Cactus (Opuntia polyacantha)

Flexile Lupine (Lupinus sericeus)

Yellow Umbrellaplant (Eriogonum flavum)

(Photos: P.S. Debnam)

(There is also a collection in the Northern Forestry Centre Herbarium (CAFB) from White Rock Coulee in the Suffield Military Reserve (Scotter and Armbruster 23081) identified by John Bassett, Biosystematics Research Institute, Ottawa.) Southern Alberta and Saskatchewan are the northernmost limits of the species' distribution (Moss 1983). Small-flowered Hawksbeard occurs on dry prairie slopes (Moss 1983) and is more common in Alberta than the previous two species. There is one occurrence as far north as the Red Deer River SE of Drumheller (Packer and Bradley 1984). The species is more common southwards into the United States (Moss 1983). Crested Beardtongue occurs on dry, open slopes in the southwestern part of the province (Moss 1983). The collection from Secondary Road 785, west of Head-Smashed-In Buffalo Jump, is more or less in the middle of the currently known localized Alberta distribution (Packer and Bradley 1984). It was hard not to spot the plant growing in a roadside ditch; it was strikingly beautiful. The species reaches its northern limits in SE British Columbia and SW Alberta, occurring more commonly in the western United States, east to Nebraska (Moss 1983). Rabbitbrush was included in the first checklist of rare vascular plants for Alberta (Argus and White 1978), but was not listed by Packer and Bradley (1984). It is a shrubby species associated with dry, exposed areas from extreme southern British Columbia, Alberta, and Sakatchewan, south to California, Arizona, and New Mexico (Moss 1983). Medicine Hat is about as far north as it grows in Alberta (Moss 1983). One of the species reported on the Whiskey Gap count, Meadow Foxtail, is an introduced forage grass that is quite rare in Alberta (Moss 1983). I have only ever seen the species in southwestern Alberta, south of the Highwood River, but it is apparently also known from Edson (Scoggan 1978). Perennial Rye Grass is a rare, introduced species seeded in pastures and lawn mixtures (Looman and Best 1979). It was in the latter situation that the species was encountered on the University of Alberta campus. This is the first time that I have seen a specimen from Alberta. The distribution of Tall Anemone in Alberta is rather localized. Most of the records centre on the Edmonton region, with scattered occurrences in the Grande Prairie-Peace River area (Moss 1983). It is a species of shrub thickets and deciduous woods (Moss 1983). I have encountered the species more commonly in Manitoba.

That the flowering season was well advanced is indicated by the first-time records of so many new species and early records for a number of others. Some notably early flowering records are those of Juncus albescens (White Rush) from Banff; Lilium philadelphicum (Western Wood Lily) from Yamnuska; Anemone riparia (Tall Anemone), Epilobium angustifolium (Fire-weed), and Symphoricarpos albus (Snowberry) from Edmonton; Melilotus alba (White Sweet Clover), Opuntia polyacantha (Prickly Pear), Chrysothamnus nauseosus (Rabbitbrush), and Lygodesmia juncea (Skeletonweed) from Medicine Hat; Oxytropis monticola (Late Yellow Locoweed) from 5 areas from Calgary south to Whiskey Gap; Coryphantha vivipara (Ball Cactus) from Ross Ranch and Medicine Hat; Sanicula marilandica (Snakeroot) from Yamnuska and Edmonton; Galium triflorum (Sweet-scented Bedstraw) from Red Deer; Grindelia squarrosa (Gumweed) from Whiskey Gap; and Machaeranthera canescens (Canescent Aster) and M. grindelioides (Toothed Ironplant) from Ross Ranch.

Following is a list of observers, totals (1987 in brackets), and other pertinent remarks for each area.

1. Whiskey Gap: In spite of having to fit their count in around branding time, Barbara and Lynn Sommerfeldt still managed to come up with an impressive total of 154 (162) species in flower. Six of their reported species are first records for the May Count. This number would have been much higher were it not for the fact that they added 20 new species to the all-time list last year! In addition to the new species, many of the rare species reported on their counts in 1986 and 1987 (Johnson 1987; 1988) were again found in flower.
2. Manyberries/Ross Ranch: George Scotter led a group of 16 on an interesting count in this area of southeastern Alberta. Observations were made in roadside and disturbed habitats within the hamlet of Manyberries and in upland short grass prairie, coulees, and along creeks in the Ross Ranch area on the north side of the Milk River. Although not a record-setting count in terms of the number of species seen, 108, this area provided some of the more unusual species recorded on the 1988 count. The other participants on this count were Jim and Lorraine Boyd; Lou Cornelius; Marion Forster; Marg Gould; George Hislop; Gloria Keogh; Irene Lewis; Lyman Matthews; Margaret McDonald; Ella and Eric Mossman; Stan Skirrow; Vince DeJong; and Oscar Zawalsky. Russian Wild Rye (Elymus junceus), first reported on the May Count last year from Valleyview, showed up in the collections from this area this year. The southern part of the province is where this species is most likely to be encountered.
3. Frank Slide Interpretive Centre: On June 1, under a light drizzle, a brief walk along the trail surrounding the Interpretive Centre revealed 16 species in flower. Derek Johnson was the observer.
4. Cypress Hills: On their sixth consecutive visit to this area, Margaret and Anton Walker and Doug and Susan Macdonald encountered 79 (81) species in flower. Exceptionally good counts over the past two years have raised the six-year average for the area to 60. Two interesting species encountered on this count

were Long-stalked Chickweed (Cerastium nutans) and Blunt-fruited Sweet Cicely (Osmorhiza chilensis). The nearest locality to the Cypress Hills indicated for Long-stalked Chickweed in the Flora of Alberta (Moss 1983) is in Waterton Lakes National Park. However, Porsild and Cody (1980) show an occurrence in extreme south-central Saskatchewan near the U.S. border. Being a slightly weedy and opportunistic species, its occurrence in the Cypress Hills is less surprising. Blunt-fruited Sweet Cicely was first reported on the May Count from this area last year. It is one of the rare vascular plants in Alberta (Packer and Bradley 1984).

5. Head-Smashed-In Buffalo Jump: On June 1, a leisurely visit by Derek Johnson to this area in southwestern Alberta resulted in a list of 75 species in flower. In addition to the buffalo jump itself, observations were made along Secondary Road 785, both east and west of the jump. The extremely dry conditions in the area appeared to have caused many of the flowers of the Solomon's -seals, lupines, and breadroots to abort before opening. The size of many of the herbaceous flowering plants, particularly the annuals, was also smaller than normal.

6. Medicine Hat: The first of what I hope is going to be an annual submission from this area was provided by Mark Oxamitny. Together with Dennis Baresco; Bob Frew; Corlaine Gardner; Phil Horch; Allexis Karne; Dan Olson; Michael O'Shea; Betty, Ken, and Kathy Padfield; Paul Strickland; Evelyn Tate; and Ben and Michael Velner a total of 38 species was reported in flower. The count was done within an 8-km radius of the city.

7. Calgary: Three reports were submitted from the Calgary area. Donna Balzer and Anita Schill encountered 24 species in flower at Nose Creek Park in Airdrie. One interesting record from this area was that of Pale Blue-eyed Grass (Sisyrinchium septentrionale). Des and Elizabeth Allen listed 46 species in flower on a small piece of prairie west of the University of Calgary campus. On May 30, with the assistance of Vanny Case, Derek Johnson recorded 31 species in flower on Nose Hill, 47 species in Bowmont Park, and 23 species in Edworthy Park. The abundance of flowering Elderberry (Sambucus racemosa) shrubs along the Douglas Fir Trail in Edworthy Park was noteworthy. These are likely domestic escapes from seeds brought in by birds. With the addition of 5 weedy species from the University of Calgary campus, the total number of species seen in flower in the Calgary area is 90 (68). The 13-year average for the area is 64.

8. Yamnuska/Kananaskis Country: The annual count in the Yamnuska area resulted in a total of 117 (119) species in flower, the third best count in the area's history. Observers included Janet Amy; Joyce and Keith Cole; Eleanor, Kevin, and Marjorie Gibney; Jean Greig; Bill Hamilton; Diane (compiler) and Mike McIvor; Eleanor Montour; Bunty Nelson; Bob and Mary Smith; and Eva Zidek. On a May 31 visit to the Canoe Meadows area of Kananaskis Country, Marg Lewis found 35 species in flower. The combined total for the area from these two reports is 125 species.

9. Banff/Canmore/Wind Ridge: Another good count was held in this area this year resulting in a list of 101 (129) species in flower. Joyce and Keith Cole; Peter Duck; Jean Greig; Diane (compiler) and Mike McIvor; Bob and Mary Smith; and Eva and Kate Zidek were the participants. The inclusion of a flowering specimen of White Rush (Juncus albescens) with the Banff count came as very much of a surprise. Aside from Baltic Rush (Juncus balticus), any species of rush is one of the last things I would expect to see in flower on the May Count. In addition to Calgary, Banff also reported Pale Blue-eyed Grass (Sisyrinchium septentrionale) in flower this year.

10. Dry Island Buffalo Jump Provincial Park: On the seventh count conducted in this area, Jim Posey and M. Pruden encountered 71 (57) species in flower. This is 15 species above the long-term average of 56 and the best count ever for the area. An interesting record in addition to Green Foxtail is the report of Indian Breadroot (Psoralea esculenta) in flower. This is the first record for the species since 1981 and only the fourth for the May Count.

11. Red Deer: Six areas were visited in the Red Deer count circle this year resulting in a total of 67 (42) species in flower. This is the second best count ever for the area; 73 species were reported in flower in 1983. Minnie Cunningham reported 14 species on a brief one-hour walk in the city. Ken and Linda Larsen added 9 species from the Benalto area. Beth and Albert Peck encountered 26 species in an area 16 km NW of Red Deer. Dorothy Dickson listed 38 species from Knee Hill Valley, SE of Innisfail. Dorothy and Sandy Murray recorded 32 species from Woodland Hills, 3 km SW of Red Deer. Herb and Helen Harris included 29 species from an area NE of Penhold and 33 species from the Grassy Lake Natural Area, E of Penhold.

12. Buffalo Lake: Charley and Ann Bird, Max Capen, and Don Carlyle reported 79 (69) species in flower on the best count ever for the Buffalo Lake Narrows area. The previous record was set just last year. In the 11 years that a count has been done in this area, 103 different plant species have been observed in flower. The yearly average is 53. The report of Crested Wheat Grass (Agropyron pectiniforme) in flower is only the second ever for the May Count.

13. Edmonton: In terms of the number of reports received, Edmonton was up 2 from last year's record to 9, but the number of participants was down 2 from last year's record of 15. The number of species reported in flower, however, was up from last year's

record of 155 to 173, an all-time area and provincial high for the May Count. Derek Johnson recorded a total of 82 (81) species in flower, 75 from Whitemud Creek between Whitemud Drive and 23 Ave., and an additional 7 weedy species from Whitemud Drive and Calgary Trail. On a wide-ranging tour of several areas of the city, including downtown, the University of Alberta campus, the North Saskatchewan River valley, Patricia Ravine, Laurier Park, and Rio Terrace, between May 27 and May 31, Patsy Cotterill encountered 64 species in flower, including 7 that are first records for the May Count. Patsy Cotterill, Alice Hendry, and Rick Nesselveck submitted a list of 83 (73) species from the Wagner Natural Area and vicinity. This is the best count ever for the area. Linda Kershaw, Elizabeth Beaubien, and Judy Fairweather encountered 46 (31) species on an acreage 1 km S of Hastings Lake. Joy Finlay listed 28 species from the Lindbrook area. On a June 2 count, Steve Zoltai included 23 species in his list from Elk Island National Park. Doris Hopkins reported 32 species from the Coyote Lake area, W of Leduc. Barb and Jim Beck's submission from the Darwell-Lac Ste. Anne area included 30 species. Jim Lange's report from the family farm NW of Westlock also included 30 (25) species in flower.The report of Sainfoin (Onobrychis viciifolia) from a roadside ditch just west of the city is the third for the May Count. Previous records have come from Ft. McMurray in 1980 and Grande Prairie in 1981. A species occasionally grown for stock feed or as a soil enricher, much like the clovers, it has escaped from these plantings and become established in a few localized areas in the province. The report of Caraway (Carum carvi) is the first for Edmonton and only the second for the May Count. It was first reported last year from Whiskey Gap. It is becoming an increasingly more common weed in the province. The report of Fireweed (Epilobium angustifolium) in flower from the city is perhaps the biggest surprise. To my knowledge, this is only the third time that the species has ever been observed in flower in May in Alberta (see Bird 1977).

14. Entwistle: The tenth annual survey of the area surrounding Hoople Lake revealed 74 (61) species in flower. This exceeds by one the 1981 record of 73. Derek Johnson, Steve Zoltai, Bob Longill, and Barry LeVoir were the observers. Lapland Buttercup (Ranunculus lapponicus) was an interesting new find for the area. Over the 10 years that this count has been done, a total of 123 different plant species has been observed in flower, with an annual average of 55.

15. Grande Prairie: A total of 62 (42) species was reported in flower from the farm of Gavin and Ellen Craig between Wembley and Grande Prairie. This is the second best total in the 12 years that this count has been conducted; 88 species were seen in 1981.

16. Fort McMurray: Fred Corbet, Jane Elser, Marion Horrocks (compiler), and Karen Welk reported 78 (79) species in flower. Surprisingly, this is only 3 above the 12-year average for the area. Considering the general earliness of the spring and the above average numbers encountered on many of the other counts in the province, I would have expected more species to be seen in flower in this area.

A complete listing of count results is available on request from the Curator of Botany, Provincial Museum of Alberta, 12845 - 102 Avenue, Edmonton, Alberta T5M 0M6.

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Author's Address:
Northern Forestry Centre, 5320 - 122 Street, Edmonton, Alberta T6H 3S5.

May Species Count Participants, May 30-31, 1987

Calgary Compiler: R. Dickson (5-2303 - 22 St NW., Calgary, AB T2M 3W5). S. Alexander, B. Anderson, P. Armstrong, R. Barclay, J. Bargman, D. Collister, L. deWit, D. Elphinstone, A. German, H. Giles, J. Goldsmith, D. Gravells, L Guillemette, M. Hagel, N. & I. Halladay, M. Harrison, D. Higgin, A. Holder, C. Hunt, K. Jones, E. Kethler, M. Klazek, J. & G. Lunn, E. Mah-Lim, J. & G. McCullough, J. & M. McDonald, J. McFaul, J. McKay, B. McKitterick, B. Murray, C. & H. Pinel, M. & H. Ross, P. Sherrington, G. Simpson, A. Slater, A. Soon, K. Spriggs, J. Steeves, A. & D. Stiles, R. Storms, J. Thompson, F. Walker, W. Wilson, R. Woods.

Banff Compiler: Mike McIvor (Box 114, Banff, AB T0L 0C0). Participants: Benoit Aubin, Joyce & Keith Cole, Heather Dempsey, Peter Duck, Martin Gebauer, Eleanor, Kevin & Marjorie Gibney, Diane & Mike McIvor, Eleanor Montour, Ian Pengelly, Bob & Mary Smith, Ena Spalding, Keith Webb, Eva & Kate Zidel.

Red Deer Compiler: Myrna Pearman (Box 127, Sylvan Lake, AB T0M 1Z0). Participants: Ray & Freda Bertram, Ron Bjorge, Karen Brassington, Rick Leyland, Minnie Cunningham, Dorothy & David Dickson, Maxine O'Riordan, Ken & Linda Larsen, Frank & Olga Lind, Craig & Bonnie Curtis, Mike McNaughton, Sandy, Kolin & Fraser Murray, Murray McKay, Tony Newman, Myrna Pearman, Beth & Albert Peck, Marie Pigeau, Jim & Vance Potter, Fred Schutz, Kerry & Marjorie Wood.

Westlock Jim Lange.

1987 May Species Count

	CALG	BANF	REDD	WEST
WEATHER:				
May 30, 1987				
Precipitation (mm)				
Cloud cover (%)	20 -70			
Wind direction	W			
Wind speed (km/hr)	5 - 30			
Temperature (C)	10 - 15			
May 31, 1987				
Precipitation (mm)				
Cloud cover (%)	30 - 90	0 - 100		
Wind direction	W			
Wind speed (km/hr)	5 - 25	0 - 5		
Temperature (C)	5 - 13	10 - 13		
TEAM EFFORT:				
Hours walking	64	34.5		
Hours driving	8	12		
Other (Canoe)		4		
Total hours	72	50.5	7.5	
Distance walking (km)		56.5		
Distance driving (km)		244		
Other (Canoe)		9		
Total distance (km)		309.5		

1987 May Bird Species Count, May 30-31, 1987

SPECIES	CALG	BANFF	REDD	WESTLOCK	TOTAL
Common Loon	9	6	6	2	23
Pied-b. Grebe	3	1	5	1	10
Horned Grebe	27		10		37
Red-necked Grebe	35	4	44		83
Eared Grebe	208		3		211
Western Grebe	63				63
Amer. Wh. Pelican	3				3
D.Cr. Cormorant	496		1		497
Amer. Bittern	2	5			7
Great Blue Heron	14		13	2	29
B.-cr. Night Heron	16				16
Tundra Swan		1			1
Canada Goose	781	102	231		1114
Green-winged Teal	42	12	6	6	66
Mallard	726	84	136	15	961
N. Pintail	314		16		330
Blue-winged Teal	507	19	37	7	570
Cinnamon Teal	114	42	8		164
N. Shoveler	392		24	3	419
Gadwall	273		13		286

American Wigeon	239	2	6	2	249
Canvasback	1079		11		1090
Redhead	411		14		425
Ring-necked Duck	25	4	10	11	50
Lesser Scaup	389	2	47		438
Wh.-winged Scoter	44		10		54
Common Goldeneye	52		41	1	94
Barrow's Goldeneye	6	3			9
Bufflehead	112	6	22		140
Hooded Merganser	2				2
Common Merganser	31	12			43
R-breasted Merganser	1				1
Ruddy Duck	169		33		202
Osprey	2	1			3
Bald Eagle		1			1
Northern Harrier	27				27
Swainson's Hawk	141	1	15		157
Red-tailed Hawk	103	1	43	2	149
Ferruginous Hawk			1		1
Rough-legged Hawk	2				2
Golden Eagle	1				1
Amer. Kestrel	27		4	3	34
Merlin	4	2			6
Peregrine Falcon	1				1
Prairie Falcon	5				5
Gray Partridge	67			2	69
Ring-necked Pheasant	18		5		23
Ruffed Grouse	14	3	4		21
Sora Rail	23	9	3	4	39
American Coot	356	2	64		422
Bl.-be. Plover	59		2		61
Semipalm. Plover	1		2		3
Killdeer	153	11	18	9	191
Amer. Avocet	217		10		227
Lesser Yellowlegs	4		2		6
Solitary Sandpiper	11	2	4		17
Willet	88				88
Spotted Sandpiper	92	9	16	7	124
Upland Sandpiper				7	7
L.-billed Curlew	16				16
Hudson. Godwit			2		2
Marbled Godwit	63		1		64
Sanderling	20				20
Semipal. Sandpiper	19				19
Least Sandpiper	4				4
Baird's Sandpiper	3				3
Pectoral Sandpiper	1				1
L.-b. Dowitcher	2				2
Common Snipe	55	17	18	11	101
Wilson's Phalarope	346	7	14		367
R.-necked Phalarope	24				24
Franklin's Gull	17		33	21	71
Bonaparte's Gull	1				1
Ring-billed Gull	2547	1	138		2686
California Gull	1936				1936
Herring Gull	26				26
Common Tern	29				29
Forster's Tern	2				2
Black Tern	140		29		169
Rock Dove	219		19	2	240
Mourning Dove	39		2		41
Great Horned Owl	6		4		10
N. Pygmy Owl	1				1
Burrowing Owl	1				1
Great Gray Owl	2				2
Short-eared Owl	5		2		7
N. Saw-whet Owl			2		2

Common Nighthawk	1		1		2
Ruby-throated Hummingbird	4		3	2	9
Calliope Hummingbird	1				1
Rufous Hummingbird	4	2			6
Belted Kingfisher	4	3			7
Yellow-bellied Sapsucker	5	1	4	2	12
Red-naped Sapsucker	2				2
Downy Woodpecker	11	1	4		16
Hairy Woodpecker	7		8		15
Common Flicker	23	17	12	2	54
Pileated Woodpecker	3	1	1		5
Olive-sided Flycatcher	4	2	2		8
W. Wood Pewee	54	9	2	2	67
Yel.-bel. Flycatcher			1		1
Alder Flycatcher	14	1		2	17
Willow Flycatcher		1			1
Least Flycatcher	208	14	56	20	298
Dusky Flycatcher	15				15
Eastern Phoebe	4		1	5	10
Say's Phoebe	1				1
Western Kingbird	18	1			19
Eastern Kingbird	69	3	11	11	94
Horned Lark	121				121
Purple Martin			15		15
Tree Swallow	533	63	158	8	762
Violet Green Swallow		6			6
N.Rough-wing. Swallow	127	21			148
Bank Swallow	540	13	633	50	1236
Cliff Swallow	773	24	7		804
Barn Swallow	233	22	20	8	283
Gray Jay	17	4			21
Blue Jay	9		12		21
Black-billed Magpie	286	36	43	8	373
American Crow	240	14	86	4	344
Common Raven	20	13	100		133
Black-capped Chickadee	52	16	31	3	102
Mountain Chickadee	1	3			4
Boreal Chickadee	2		1		3
Red-breasted Nuthatch	13	9	2		24
White-breasted Nuthatch	3		3		6
House Wren	66		30	6	102
Marsh Wren	2		1		3
Golden-crowned Kinglet		7			7
Ruby-crowned Kinglet	43	39	9		91
Mountain Bluebird	136	2	86		224
Townsend's Solitaire	2				2
Veery	7				7
Swainson's Thrush	10	4			14
Hermit Thrush	6	2			8
American Robin	333	89	126	16	564
Varied Thrush	1	1			2
Gray Catbird	3		4	3	10
Brown Thrasher	3				3
Sprague's Pipit	6				6
Cedar Waxwing	44		4		48
Loggerhead Shrike			1		1
European Starling	626	27	76	6	735
Solitary Vireo	4	1			5
Warbling Vireo	42	19	3	9	73
Philadelphia Vireo			1		1
Red-eyed Vireo	32		18	5	55
Tennessee Warbler	23	11			34
Or.-cr. Warbler	2	9			11
Yellow Warbler	162	10	35	12	219
Yellow-rumped Warbler	34	19	6		59
Townsend's Warbler	1	7			8
Blackpoll Warbler	1				1

Blk.-and-wh. Warbler	3				3
American Redstart	1	1			2
Ovenbird	16	3		1	20
N. Waterthrush	4	3			7
Con. Warbler	7				7
Common Yellowthroat	34	10	1		45
Wilson's Warbler	20	4			24
Western Tanager	2				2
R.-b. Grosbeak	15		6		21
Ru.-si. Towhee	2				2
Chipping Sparrow	82	36	6	3	127
Clay-color Sparrow	203		33	14	250
Vesper Sparrow	117	1	15		133
Sav. Sparrow	245	6	38	7	296
Baird's Sparrow	1				1
Le Conte's Sparrow	5		3	2	10
Fox Sparrow		1	1		2
Song Sparrow	12	3	16		31
Lincoln's Sparrow	22	8	2	6	38
Swamp Sparrow				1	1
White-throated Sparrow	14	2	16	2	34
Wh.-crowned Sparrow	15	2	5		22
Dark-eyed Junco	21	25	9		55
Ches.-col. Longspur	2				2
Bobolink		2			2
R.-winged Blackbird	792	62	107	75	1036
Western Meadowlark	135	2	13		150
Yel.-headed Blackbird	403	1	84		488
Rusty Blackbird	7	1			8
Brewer's Blackbird	324	12	51	2	389
Common Grackle	10		2	2	14
Brown-headed Cowbird	268	65	24	13	370
Northern Oriole	82		43	32	157
Purple Finch	6		7		13
White-winged Crossbill	1				1
Pine Siskin	111	25	22		158
Am. Goldfinch	49	2	51	3	105
Evening Grosbeak	4				4
House Sparrow	327	9	92		428
Total Individuals	21898	1205	3468	465	27036
Total Species	177	95	115	55	193

Hairy Woodpecker (Photo: Edgar T. Jones)

May Species Count Participants, May 28-29, 1988

Milk River Compilers: Andre Legris (#5 500 Dickson St., Peterborough, Ontario, K9H 3K1), and Lyman Mathews. Participants: Jim Boyd, Lorraine Boyd, Lou Cornelis, Marion Forster, Marg Gould, George Hislop, Gloria Keogh, Irene Lewis, Margaret McDonald, Ella Mossman, Eric Mossman, George Scotter, Stan Skirrow, Vince D. Yong, Oscar Zavalsky.

Waterton Participants: Teresa & Doug Dolman, Gordon Ross, Shirley Sillito, Janice Smith, Mike VanDyk, Joyce & Paul Wilkinson.

Lethbridge Participants: Ruth & Jason Atwell, Anne & Bill Brown, Teresa & Doug Dolman, Connie Goodall, Bob Hall, Joanne & Don Hayden, Doris Hedenstrom, Hazel Hudson, George & Betty Luco, Lois McKillop, Cara Moser, Jamie Niessen, Grace Norgard, Sheila Petherbridge, Alan Roberts, Gordon Ross, Katharine & Frank Russell, Shirley & Weldon Sillito, Mary Thomson, Mike VanDyk, Joyce & Paul Wilkinson, Al Williams.

Medicine Hat Participants: Dennis Baresco, Bob Frew, Corlaine Gardner, Phil Horch, Allexis Karne, Micheal O'Shea, Dan Olson, Mark Oxamitny, Betty Padfield, Kathy Padfield, Ken Padfield, Paul Strickland, Evelyn Tate, Ben Velner, Micheal Velner.

Calgary Compiler: R. Dickson (5-2303 22 St. NW, Calgary AB, T2M 3W5) Participants: R. Barclay, J. Bargman, A. Blackborne, G. Clarke, R. Clarke, D. Collister, C. Cooper, L. deWit, R. Dickson, B. Elder, E. Kethler, R. Dickson, J. Goldsmith, N.& I. Halladay, S.& M. Harrison, D. Higgin, A. Holder, C. Hunt, K. Homes, S. Kassai, M. Klazek, T. Korolyk, P. Lundberg, J. MacKay, J.& G. McCullough, J.& M. McDonald, W. McKitterick, M.& H. Ross, P. Sherrington, G. Simpson, A. Slater, J. Thompson, R. Woods.

Banff Compiler: Mike McIvor (Box 114 Banff AB, TOL OCO) Participants: Janet Amy, Peter Duck, Eleanor, Kevin & Marjorie Gibney, Jean Greig, Bill Hamilton, Diane & Mike McIvor, Eleanor Montour, Bunty Nelson, Bob & Mary Smith, Eva & Kate Zideck.

Red Deer Participants: Ray & Freda Bertram, Minnie Cunningham, Dorothy & David Dickson, Margaret & Erhling Glabais, Herb & Helen Harris, Ken & Linda Larsen, Dorothy & Sandy Murray, Bill Nesbitt, Myrna Pearman, Beth & Albert Pelk, Marie Pijeau, Jim Potter, Joyce Reading, Kerry & Marjorie Wood.

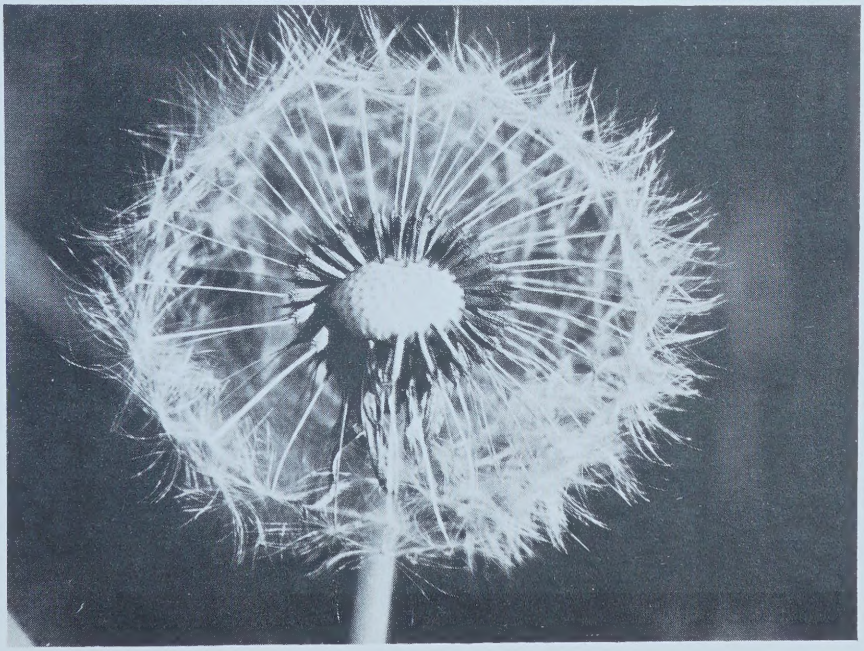
Stettler Compiler: Lloyd Lohr (Box 1414 Stettler AB, TOC 2L0) Participants: Ann Bird, Charles D. Bird, Max Capen, Don Carlyle, Bertha Clarke, Blair & Stuart Fix, Trudie Grafe, Gladys & Wilf Hewlett, Eva Kirtley, George & Grace Neill, Kelly Strandquist.

Edmonton Compiler: Jim Lange (13216-128 Ave. Ed. AB, T5L-3H2) Participants: Kim Allan, John Banks, Barb & Jim Beck, Dave Cuthiell, Louis Hochachka, Gerry Lunn, Jack Park, Alf Scott, Eric Wallace.

Grande Prairie Compiler: Ellen Craig (RR#1 Wembley AB, TOH-3S0) Participants: Gavin & Ellen Craig.

1988 May Species Count

	MILK	WATE	LETH	MEDI	BANF	REDD	STET	EDMO	GRAN
WEATHER:									
May 28, 1988									
Precipitation (mm)					0				
Cloud cover (%)					50-90				30
Wind direction					W				E
Wind speed (km/hr)					0-15				15
Temperature (C)	30				8-16				17
May 29, 1988									
Precipitation (mm)				5	10	3-5	Trace		Trace
Cloud cover (%)					90-100	50-100	75-100		20
Wind direction					W	W	NW		E
Wind speed (km/hr)					0-10	10-40			10
Temperature (C)				18	6-7	8-10	6-18		15
TEAM EFFORT:									
Hours walking					48.5	46.5		55.5	2
Hours driving					6	7		47	7.75
Other (canoe)									1
Total hours		25	133		54.5	53.5	35.75	102.5	10.75
Distance walking (km)	24					49.5	5.76	79	2
Distance driving (km)	64					182	161.6	608	96
Other							28.8		
Total distance (km)	88					231.5	196.0	687	98



Common Dandelion

(*Taraxacum officinale*)

(Photo: J.D. Johnson)

May Species Count, May 28-29, 1988

	LOCALITIES										
SPECIES	MILK	WATE	LETH	MEDI	CALG	BANF	REDD	STET	EDMO	GRAN	TOTAL
Common Loon		3	1		9	2	2		7		24
Pied-b. Grebe		1			8		2		23	3	37
Horned Grebe			26		51		54	11	24	7	173
Red-necked Grebe					48	4	46	1	350	6	455
Eared Grebe			37	13	335		77	6	608	308	1384
Western Grebe			1		32				90		123
Amer. Wh. Pelican			86	7	31						124
D.Cr. Cormorant			13	24	415				18		470
Amer. Bittern					1	1			10	2	14
Great Blue Heron		4	15	41	34		2	4	14		114
B.-cr.Night Heron			5	1	17				2		25
Wh.-faced Ibis			1								1
Tundra Swan			1		10				2		13
Trumpeter Swan										23	23
Lesser Snow Goose										1	1
Canada Goose	24	4	575	108	1346	67	253	85	567	123	3152
Green-winged Teal			20	4	42	17	17	27	170	13	310
Wood Duck				6							6
Mallard	8	21	559	107	829	64	175	199	765	321	3048
N. Pintail	2	1	126	55	183	2	20	51	66	24	530
Blue-winged Teal		8	107	25	414	17	111	275	741	68	1766
Cinnamon Teal		6	27	6	122	16	3		31	7	218
N. Shoveler		2	208	41	159	2	20	84	399	46	961
Gadwall			77		279	2	12	34	237	33	674
American Wigeon		1	141	11	265	2	6	12	256	100	794
Canvasback		1	39	24	515		1	8	91	76	755
Redhead			44		337		23	11	142	37	594
Ring-necked Duck		9			76	2		4	61	9	161
Lesser Scaup			20	2	311	6	65	48	673	1062	2187
Greater Scaup					4						4
Harlequin Duck		7			8						15
Wh.-winged Scoter					18		2		6	417	443
Common Goldeneye		1			37		13	13	93	1	158
Barrow's Goldeneye		2			24	5			71		102
Bufflehead		2	4		32	4	19	14		48	123
Hooded Merganser					1					7	8
Common Merganser		1	3	8	89	15		33	12	5	166
Ruddy Duck		1	24	4	218		21	2	128	47	445
Turkey Vulture	1			2							3
Osprey		2		1		3			9		15
Bald Eagle						2			1		3
Northern Harrier	4	1	35		15	1			8	3	67
Sharp-shinned Hawk				1				2	2		5
Cooper's Hawk					4		2				6
Northern Goshawk				1	3						4
Br.-wing. Hawk				1							1
Swainson's Hawk	1	2	85	6	62		6	2	5		169
Red-tailed Hawk	1	2	44	4	60		24	23	36	7	201
Ferruginous Hawk			7					1			8

May Species Count, May 28-29, 1988

	LOCALITIES										
SPECIES	MILK	WATE	LETH	MEDI	CALG	BANF	REDD	STET	EDMO	GRAN	TOTAL
Rough-legged Hawk			1								1
Golden Eagle			1								1
Amer. Kestrel	5		27	8	20		5		7	1	73
Merlin			5	5	4				2		16
Peregrine Falcon					1						1
Prairie Falcon			3	1	1						5
Wild Turkey											0
Gray Partridge	2		85	9	13		2		3		114
Ring-necked Pheasant			23	19	22				1		65
Spruce Grouse					3	1					4
Ruffed Grouse		7	3		5	3	2		10	8	38
Sage Grouse	4										4
Sharp-tailed Grouse	4			2			2		4		12
Yellow Rail					3						3
Sora Rail		4	2		23	6	1	1	47	38	122
American Coot	2	5	255	29	856	6	268	62	543	48	2074
Sandhill Crane		1								2	3
Bl.-be. Plover			3	1	90			3	2	3	102
Semipalm. Plover			1								1
Killdeer	11		103	55	106	14	20	37	60	10	416
Amer. Avocet			42	31	220		27	18	92	1	431
Greater Yellowlegs						1					1
Lesser Yellowlegs			1		1			1	31	2	36
Solitary Sandpiper					4			2		1	7
Willet	1		15	13	94		1	5	16		145
Spotted Sandpiper		4	47	25	130	19	10	15	62		312
Upland Sandpiper			1		1				1		3
Whimbrel											0
L.-b. Curlew			32		2						34
Hudson. Godwit					1						1
Marbled Godwit	1		23	17	91		8	2	9	4	155
Red Knot					2						2
Sanderling					19				1		20
Semipal. Sandpiper			20		60				60	2	142
Least Sandpiper							2				2
Baird's Sandpiper					6						6
Pectoral Sandpiper					3		1		6		10
S.-b.Dowitcher			1								1
L.-b.Dowitcher										11	11
Common Snipe		10	9		23	15	6	2	92	21	178
Wilson's Phalarope	2		167	9	291		83	16	898	23	1489
R.-necked Phalarope					35				1500		1535
Franklin's Gull		50	8	15	265		36	198	500	727	1799
Bonaparte's Gull					2						2
Ring-billed Gull		7	459	52	570		51	94	1317	38	2588
California Gull			50	71	3148		1	36	289	4	3599
Herring Gull				7	1		13				21
Gull sp.		10	1653	77				10			1750
Common Tern			7	4	21			8	83		123

May Species Count, May 28-29, 1988

SPECIES	LOCALITIES MILK	WATE	LETH	MEDI	CALG	BANF	REDD	STET	EDMO	GRAN	TOTAL
Forster's Tern					9				303		312
Black Tern		14	18		116		20	11	257	75	511
Rock Dove	14		390	236	91		56	24	137		948
Mourning Dove	2	1	127	58	26	1	7	3	7		232
Bl.-billed Cuckoo									1		1
Great Horned Owl			12	1	11		2		4	10	40
Burrowing Owl	3		1	3	1						8
N. Saw-whet Owl							1		1		2
Common Nighthawk			3	5	1						9
Black Swift											0
Ruby-throated Hummingbird				2	1		4	6	3		16
Calliope Hummingbird		1				3					4
Rufous Hummingbird		6			6	1					13
Belted Kingfisher		1	5	9	24	1		1			41
Yellow-bellied Sapsucker		7	4		13	4	9	2	15	3	57
Downy Woodpecker			3	4	10				10	3	30
Hairy Woodpecker		1	5		6		8		2	3	25
Three-toed Woodpecker		1				1			10		12
Bl.-back. Woodpecker									2		2
Common Flicker		8	24	14	36	8	3		13	8	114
Pileated Woodpecker					3	1	3	1			8
Olive-sided Flycatcher		5	1		9	5	1		12		33
W. Wood Pewee		6	41	2	188	4	3	3	25	10	282
Yel.-bel. Flycatcher									4		4
Alder Flycatcher			4		11				38		53
Willow Flycatcher		1	2			1					4
Least Flycatcher		21	49	15	226	15	30	9	457	1	823
Dusky Flycatcher					1						1
Western Flycatcher					1						1
Great Crested Flycatcher							2		1		3
Eastern Phoebe			4		7		5	2	43	2	63
Say's Phoebe					1					1	2
Western Kingbird	1		120	46	5						172
Eastern Kingbird	1		183	106	66	2	11	12	53	4	438
Horned Lark	50		367	49	138						604
Purple Martin							7	28	50		85
Tree Swallow		27	103	18	981	17	157	70	278	17	1668
Violet Green Swallow		6			10	11					27
N.Rough-wing. Swallow			98	7	316	24					445
Bank Swallow		10	232	43	386		45	290	76		1082
Cliff Swallow	15	38	180	7	651		72	200	60		1223
Barn Swallow	12	16	101	16	250	12	39	77	139	16	678
Gray Jay		1	2		4	4			1	1	13
Steller's Jay		4									4
Blue Jay					8		9	2	19	6	44
Clark's Nutcracker						1					1
Black-billed Magpie	2	7	202	160	276	8	60	21	107	24	867
American Crow	1	25	199	29	278	14	34	111	127	54	872
Common Raven		4	39		38	12	3	1	1	6	104

May Species Count, May 28-29, 1988

	LOCALITIES										
SPECIES	MILK	WATE	LETH	MEDI	CALG	BANF	REDD	STET	EDMO	GRAN	TOTAL
Black-capped Chickadee		6	21	23	71	7	34	11	63	12	248
Mountain Chickadee		2			5	3		3			13
Boreal Chickadee					8		4				12
Red-breasted Nuthatch		8	9	2	42	10	9		7	1	88
White-breasted Nuthatch					2		3		2		7
Brown Creeper				1	1						2
Rock Wren			7								7
House Wren		15	96	102	96	2	25	12	79		427
Winter Wren		3									3
Marsh Wren				1	3			4			8
American Dipper		1			3						4
Golden-crowned Kinglet		12			17	11					40
Ruby-crowned Kinglet		31	2		52	30	4		5		124
Mountain Bluebird		11	161		38	2	61	37	15		325
Townsend's Solitaire		1	5		1	2					9
Veery		2	11	2	16			4	3		38
Gr.-ch. Thrush			3							1	4
Swainson's Thrush		7	44	3	27	5				1	87
Hermit Thrush		3			7	2	1		16	2	31
American Robin	2	106	493	241	378	59	73	55	1099	35	2541
Varied Thrush		1	7		9	6					23
Gray Catbird		1	14	5	12			2	14		48
Northern Mockingbird											0
Brown Thrasher	1		10	20	3						34
Sprague's Pipit	9		4	1	7						21
Bohemian Waxwing		4									4
Cedar Waxwing		3	103	36	34		6		26		208
Loggerhead Shrike					1						1
European Starling	1	15	744	305	590	5	71	87	619	48	2485
Solitary Vireo			2		2	2			1		7
Warbling Vireo		17	6	29	58	2	2		40		154
Philadelphia Vireo					2				6		8
Red-eyed Vireo			3	8	22		16	2	94		145
Tennessee Warbler		1			13				1		15
Or.-cr. Warbler		2			3	5					10
Yellow Warbler	1	65	105	141	158	8	16	25	240	13	772
Magnolia Warbler									2		2
Cape May Warbler									1		1
Yellow-rumped Warbler		7	3		18	20	4		18	3	73
Townsend's Warbler		12			1	4					17
Palm Warbler											0
Blackpoll Warbler			1			1					2
Blk.-and-wh. Warbler			1						5		6
American Redstart			11		1	2			1		15
Ovenbird					10	2			15	8	35
N. Waterthrush			4		2	13					19
Con. Warbler					7				2		9
Mourning Warbler					1				8		9
MacGillivray's Warbler		3			2						5

May Species Count, May 28-29, 1988

SPECIES	LOCALITIES MILK	WATE	LETH	MEDI	CALG	BANF	REDD	STET	EDMO	GRAN	TOTAL
Common Yellowthroat		9	14	25	42	5		4	45	12	156
Wilson's Warbler		15	4	1	19	4					43
Y.-breast. Chat				1							1
Western Tanager		4	1		3				3		11
R.-b. Grosbeak				1	22		4		34	11	72
Bl.-head. Grosbeak		1									1
Laz. Bunting		4	2	2							8
Ru.-si. Towhee			3	16				1			20
Tree Sparrow		3		3						12	18
Chipping Sparrow		7	36	34	64	19	8	2	48	13	231
Clay-color. Sparrow		9	45	35	150		23	36	182	22	502
Brewer's Sparrow				2							2
Vesper Sparrow		3	155		94	1	5	9	6	2	275
Lark Sparrow			18	19							37
Lark Bunting	11			2			1				14
Sage Sparrow				2							2
Sav. Sparrow	2	13	89	19	231	2	24	30	104	79	593
Baird's Sparrow				1							1
Le Conte's Sparrow					9		1	6	66		82
Sharp-tail. Sparrow								1			1
Fox Sparrow		2									2
Song Sparrow		43	30		34	7	19	29	65	3	230
Lincoln's Sparrow					20	11			54		85
Swamp Sparrow									14	2	16
White-throated Sparrow					29	1	24	3	190	8	255
Wh.-crowned Sparrow		30	35		6	7					78
Dark-eyed Junco		11	3		34	15	12	4	31	9	119
Ches.-col. Longspur	24		57		6						87
Bobolink	4								16		20
R.-winged Blackbird	8	29	321	332	829	61	152	177	3053	160	5122
Western Meadowlark	25	5	193	95	138	1	2	16	5		480
Yel.-headed Blackbird		19	375	100	387	1		50	243	17	1192
Brewer's Blackbird	8	14	198	64	253	2	52	39	77	22	729
Common Grackle			70	122	27		6	9	11	3	248
Brown-headed Cowbird		34	124	45	266	34	21	7	130	28	689
Northern Oriole		2	82	66	133	1	2	42	219	7	554
Purple Finch					7		15		17	12	51
Pine Siskin		243	92	10	417	59	20		36	3	880
Am. Goldfinch		4	74	46	151		41	8	74		398
Evening Grosbeak					4		2				6
House Sparrow	2	2	407	217	271	1	56	56	426		1438
Total Individuals	272	1236	12195	3963	22155	884	2925	3105	21141	4541	72417
Total Species	39	103	137	107	178	91	105	92	144	93	237

Species Recorded on Five or Fewer Counts

SPECIES	COUNTS AND NUMBER RECORDED
Western Grebe	Wabamun Lk. 4
Gt.Blue Heron	Calgary 3; Medicine Hat 1; Ponoka 1; Waterton Lks. 1
Green Winged Teal	Banff 2; Calgary 4
Am. Black Duck	Calgary 1
N. Pintail	Banff 1; Calgary 16; Edmonton 11; Wabamun Lk. 3
Gadwall	Calgary 12; Wabamun Lk. 3
Am. Wigeon	Calgary 9; Dickson Dam 4; Medicine Hat 1; Wabamun Lk. 75
Canvasback	Medicine Hat 13; Wabamun Lk. 2
Redhead	Calgary 3; Wabamun Lk. 25
Ring-necked Duck	Wabamun Lk. 14
Lesser Scaup	Calgary 4; Medicine Hat 5; Prairie Oasis 1; Wabamun Lk. 16
Scaup sp.	Waterton Lks. 1
Harlequin Duck	Calgary 5
Oldsquaw	Edmonton 1
Barrow's Goldeneye	Calgary 5
Goldeneye sp.	Banff 8
Bufflehead	Banff 3; Calgary 4; Edmonton 1; Wabamun Lk. 10
Hooded Merganser	Calgary 1; Wabamun Lk. 26
R.-breast. Merganser	Calgary 1
Ruddy Duck	Wabamun Lk. 2
Northern Harrier	Calgary 1; Edmonton 4; Medicine Hat 6
Sharp-sh. Hawk	Lethbridge 1; Snake's Head 1
Cooper's Hawk	Calgary 1; Stettler 1
Accipiter sp.	Banff 1
Red-tailed Hawk	Hinton 2
Eagle sp.	Wabamun Lk. 1
Gyrfalcon	Medicine Hat 1; Red Deer 1
Prairie Falcon	Calgary 2; Clareshom 2; Horseshoe Canyon 4; Medicine Hat 1; Wildlife Res. 2
Falcon sp.	Edmonton 1
Spruce Grouse	Edson 2; Ft. Smith 1; Hinton 2; Rocky Mtn. Hse. 8; Waterton Lks. 1
Willow Ptarmigan	Ft. Smith 15
Wh.-tail. Ptarmigan	Bow Summit 19
Wild Turkey	Cypress Hills 15
Am. Coot	Calgary 1; Wabamun Lk. 13
Killdeer	Banff 8; Calgary 9; Snake's Head 10; Wabamun Lk. 1; Waterton Lks. 2
C. Snipe	Banff 1
Mourning Dove	St. Paul 1
N. Hawk Owl	Edmonton 1; Wembley 2
Barred Owl	Long Island Lk. 1
Gt. Gray Owl	Edson 5; Elk Island 1; Hinton 1; Long Island Lk. 2; Wildlife Res. 7
Boreal Owl	Edmonton 2; Edson 1; Wembley 1

N. Saw-whet Owl	Calgary 1; Edmonton 22; Ponoka 1
Bl. Backed W'pecker	Wabamun Lk. 1
Steller's Jay	Banff 2; Edmonton 1; Waterton Lks. 8
Clark's Nutcracker	Banff 96; Waterton Lks. 2
Chickadee sp.	Banff 118; Bow Summit 3
Winter Wren	Banff 1; Edmonton 1
Townsend's Solitaire	Banff 1
American Robin	Calgary 6; Edmonton 6; Lethbridge 3; Red Deer 3; Rocky Mountain House 1
Thrush sp.	Hinton 1
Cedar Waxwing	Edmonton 98; Medicine Hat 18
Loggerhead Shrike	Lethbridge 1
Am. Tree Sparrow	Calgary 8; Horseshoe Canyon 3; Lethbridge 12
Song Sparrow	Lethbridge 2
Wh.-throated Sparrow	Edmonton 2
Wh.-crowned Sparrow	Medicine Hat 1
Harris' Sparrow	Claresholm 1
Lapland Longspur	Horseshoe Canyon 1; Medicine Hat 5
Red-winged Blackbird	Banff 2; Lacombe 2
W. Meadowlark	Rimbey 1
Rusty Blackbird	Wabamun Lk. 9
Brewer's Blackbird	Lacombe 1
Blackbird sp.	Calgary 1; Wildlife Res. 1
Rosy Finch	Lethbridge 26
Purple Finch	Edmonton 31, Ponoka 1; Stettler 1
Red Crossbill	Edmonton 3; Hinton 30; Snake's Head 1; Wildlife Res. 20
Redpoll sp.	Edson 99; St. Paul 123
Bird sp.	Hinton 22

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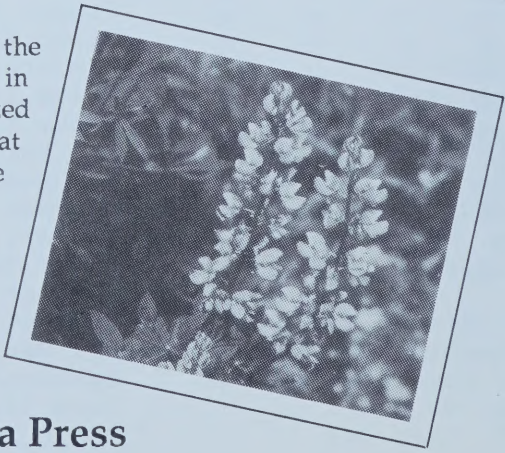

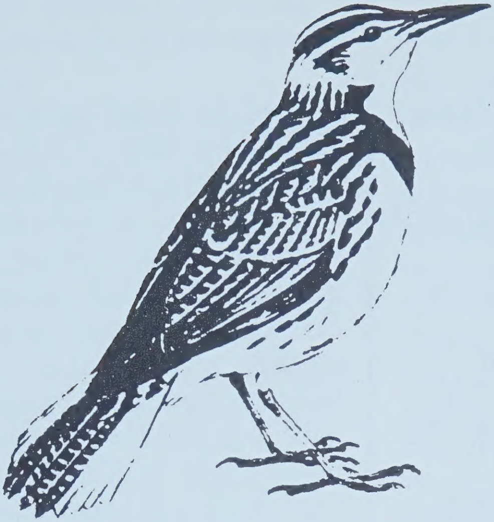

MEADOWLARK

Song of Eastern Meadowlark Heard North of Blueridge

Barbara and James Beck

On July 18, 1988 a meadowlark which was not singing the usual song of the Western Meadowlark was observed by us singing on a fence in the Corbett Creek area, northeast of Blueridge, east of Whitecourt. The bird's song was characterized by two downward slurred whistles. We observed the bird for about 20 minutes at close range with a large scope. The extension of the yellow throat onto the face was not clear enough to positively identify the bird as an Eastern or Western species. The best way to differentiate these species is supposed to be by their song.

On July 20, Jim Beck and Gerry Lunn traveled to the area to record the bird. At this time the bird was busy carrying food to two and possibly three nests and had little time to sing. The conclusion that there was more than one nest was arrived at by the fact that two, and possibly three, female Meadowlarks were observed to attack a Kestrel which flew low over the area. In two and one half hours, only one song was recorded but that song appears to be the "classic" Eastern Meadowlark song. On July 22 the bird was far too busy carrying food to do any singing so no songs were recorded on that date. Other vocalizations recorded appear to be similar to those of the Western Meadowlark. Bruce McGillivray at the Provincial Museum has had a few other examples of Meadowlarks which sing strange songs. Next summer we shall try to get other recordings of Meadowlarks in the area. Listen carefully to the Meadowlarks you see in the future and see if you can find more of these birds.

Authors' Address:
10947 - 36 Avenue, Edmonton, Alberta T6J 0B9.

ECOLOGY—ECONOMICS—EDUCATION—ENVIRONMENT—ETHICS

Mary S. Lore

14th winner of the Loran L. Goulden Memorial Conservation Award, January, 1989.

Past President of the Calgary Field Naturalists 1975-1977
Past President of the Federation of Alberta Naturalists 1979-1981
Vice President of the Canadian Nature Federation (Western V.P. of Alberta,. Saskatchewan, Manitoba and N.W.T.) 1978-1979.

ECOLOGY - That aspect of biology which deals with the interdependency of relationships

ECONOMICS - the production and distribution of worldly wealth

EDUCATION - the development and cultivation of natural powers

ENVIRONMENT - the existence, growth and welfare of organisms

ETHICS - the philosophy of morals; the standard of character established by a race or a nation, hence group of people.

This morning my walk took me through a fringe park-like area along the top of the high bank of the Bow River. I looked down upon a gravel pit as well as the fresh green trees bordering the river. I heard the honk of the Canada Geese, the quack of the Mallard Drake, the song of a Robin and the raucous call of a Magpie. Saskatoon bushes were in full bloom, the slopes and valleys were filled with the bright yellow of Golden Beans and there were small clumps of Early Blue Violets. My day had a wonderful beginning as I also viewed the distant mountains through the Bow River valley. It is good to be alive I thought and especially to be in Canada.

Today I carried a garbage bag with me to collect the bits and pieces of refuse which my thoughtless and careless fellow man has tossed along the pathways. Today I collected tabacco cartons, buts and foil; match cartons, fast food papers and plastic wrappings; fruit juice, pop and beer containers; other forms of plastics such as drinking straws, wrappings, bags, bottles and tags. Candy and gum wrappings and sheets and sections of newspapers, newspaper bundle tie-cords and string and one large running shoe which has been there for weeks. A total of sixty-three items. It reduces my level of frustration toward my fellow human beings who litter my lovely area if I count the items and classify them. I find the users of tabacco are the most careless offenders - that tells us something when about thirty percent of the population smoke. The next offenders are the fast-food diners and the discarders of various plastic products rate a third in my books. I might say this is a consistent pattern for over fifteen years of collecting discarded items along streets, in parks and natural areas. Why do people continue to discard their personal garbage as we are continually being enlightened not to do so?

The garbage inventory indicates most of the items do not contribute toward good health such as tabacco, fast food items, pop and liquor, so the conclusion must be, "If I do not value my health enough to take care of it, why should I value the environment enough to keep it healthy and clean!".

It is an attitude problem. It takes years of education to change the attitudes of the masses. Many are obsessed with "my rights".

Rights are the companions of responsibilities. The environment and its ecological systems are our responsibility to protect, appreciate and leave as we found them so that they may flourish in the future.

There is the violence factor in attitudes as well. It is accepted by many in professional sports. Fans pay good money to watch such sports and continue to tolerate the violence. I must admit that some progress is being made to deal with aspects of violence in sports, and society in general so violence is not being ignored entirely but to deal with it successfully is difficult. So the Environment receives its share of violence - the scars of mining, lumbering, roads, dams in rivers, gravel pits and garbage sites, to mention only a few.

Something needs to be said about the powers and influences of the personnel of corporations and government, particularly those politicians and managers who make the decisions affecting the environment. Here, it seems economics is the controlling factor. Hence the environment then suffers from ABUSE by government and the corporations. The rivers will receive the chemicals and the downstream communities and wildlife will suffer as they consume the impurities in the water. Industry made scars and accumulated waste products from homes and industry destroy the aesthetic as well as the economic values of any area.

EDUCATION barely gives lip service to the importance of the ENVIRONMENT AND ITS ECOLOGY. EDUCATION is important in these areas from kindergarten onward and should never stop. I know dozens of people who were touched by the environment through someone and are doing everything possible to preserve it but we are in the minority. The numbers are growing but such people are "booted out" in places of authority and decision making if they "fight" for the environment. SCARED? WHY? IT IS VERY POLITICAL!

Are the aesthetic values of an area important? Of course they are! Has anyone been known to camp beside a drilling rig in an oil patch?, by a pulp mill, by a strip mine or near a city garbage dump? The innate need for mental health stability come through loud and clear when the masses descend upon camping areas on a long weekend. We head for the hills, to get away from it all because we crave fresh air, green trees, fresh flowers, running streams and the sight of wild creatures of nature. It is required by the human soul so that it can be restored to a healthy state from the stresses and pressures created by our high-tech business environment. As favourite outdoor and wilderness haunts become polluted or disappear completely, how many human beings will 'break' spiritually from the anxieties of higher prices and taxes, less income and coping with day to day pressures. IS IT CHEAPER TO BUILD MORE INSTITUTIONS AND HOSPITALS FOR THE MENTALLY STRESSED OR SHOULD MONEY BE SPENT ON EDUCATION (massive and correct) to PRESERVE THE ENVIRONMENT, SO THE ELEMENTS OF ECOLOGY CAN FUNCTION COMPLETELY AND WE WILL STILL HAVE IT TO ENJOY??!! ANSWER - EDUCATION OF COURSE!

At the Alberta Wilderness Association Annual meeting in Canmore on April 29, many of the speakers emphasized that a uniform policy which is enforceable at the government level is essential in all countries to protect wildlands, rivers, parks and lakes. An overall enforceable policy must replace the present practice of individuals and groups fighting to save or protect local special areas.

At the conference on Alberta's Flowing Rivers May 11 - 13 sponsored by the Dept. of Continuing Education of the University of Calgary, the dominant theme was the importance of the aesthetic aspect of rivers to people. The conference brought together those who use the river as a source of recreation to restore one's mental fatigue, sportsmen (personally I do not call killing the creatures with whom we share the planet a sport and I do not approve of the practice), authors, industry and government officials. It was fitting and of educational value that the Environmental Education Director of the Federation of Alberta Naturalists used "Alberta's Rivers" as the poster competition theme with the school children and received 800 entries. The winning posters receiving awards were on display at the conference. Here are 800 potential environment supporters. I maintain what is learned and practised during the early years of a child's life shapes the attitude and will influence decisions in later life. We should be aware that sixty per cent of the influence comes from the home environment and the balance from education and other institutions.

The representatives from the pulp companies had the nerve to state that they are still dumping harmful chemicals into the rivers of the world. Why not recycle the water that has to be used and keep the chemicals out of the river? Why? The technology has to be available. Economics!! It is cheaper to pollute someone else's drinking water! Ethics! Why don't other people care too!?! Why? Why?

A well known and respected person from Jasper told the pulp industry representative in reply to his statement, that society needs paper and so the industry must exist, "Do Not Cut Another Tree!! Recycle the Waste Paper We Now Have, Concentrate On A Technology To Do That!"

ENVIRONMENTAL EDUCATION must be complete regarding aspects of the ECOLOGY. It must be compulsory as

Federation of Alberta Naturalists
NATURAL HISTORY STUDY
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Mary S. Lore with F.A.N. display (Photo: P. Clayton) reading, writing and arithmetic, and at all levels including careers education. ETHICS MUST INFLUENCE ECONOMIC DECISIONS WHICH AFFECT THE ENVIRONMENT.

Certainly we all use petroleum products, paper and mining products and each one of us creates too much personal garbage. However, this is 1989 and the technology is available to go into space and to the moon, and it has to be available to recycle on a large scale. Those who are reponsible must make economic decisions to do the job and remove the scars and plant the trees and recycle the garbage. IT HAS TO BE DONE NOW.

The ENVIRONMENT is our best friend. We live in it. It has an aesthetic value for each one of us. It is our reponsibility as individuals of corporations and governments to protect it. The environment has been given some safeguards to protect itself by the same creator who gave us life and brains. The winds clear the pollution away, sunshine encourages growth and gives us warmth, the rains and snows provide needed moisture, floods provide nutrients to river valleys, but somehow modern technology is choking the environment to dealth. We do not always understand the violence of nature in the form of thunderstorms, earthquakes, hailstorms, blizzards, floods and tornadoes but usually the strong survive and a stronger species is the result. We accept the violence of nature because we cannot control it. However, we can, if we will, control the destruction of the environment. Who needs another dam, especially when it is being built on a couple of geological faults - what next!

The environmental education process will take some time to undo the present bureaucracy, but it can be done. Start today with your children, take along a garbage bag when walking, picnicing and camping. The Environment is our best friend - keep it clean and healthy and it shall provide us with many years of happiness.

We must insist on MASSIVE EDUCATION NOW at every level, so the decision maker will use ETHICS TO INFLUENCE THE ECONOMICS OF POLICIES FOR THE SAKE OF THE ENVIRONMENT AND ITS ECOLOGY. EEEEE!

Author's Address:
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Environmental Conservation, Parks and Natural Areas

Patricia Stansfield

Why is it necessary to conserve natural areas? Many people have at last come to recognize that in the long term our natural heritage is as important as our cultural one. Our 'civilized' world has developed technological tools so powerful that large areas of the natural world are damaged within a very short time. And the damage is usually impssible to repair. To counteract this destruction the concept of protected areas is growing rapidly. "A protected area is a storehouse of nature and natural processes in the same manner as a museum preserves culturally important items."(1)

Preservation of open space has been a concern of nature loving people for at least two hundred years. Without the foresight of our ancestors we would not be able to enjoy Stanley Park in Vancouver or the Plains of Abraham in Quebec. They are open spaces situated within cities on ideal land for urban development. The concept of preserving large open spaces away from cities was put into effect, in North America especially, many years ago. As early as 1872 Yellowstone National Park was created mostly because of its beauty. "This area is too big and too beautiful to belong to any individual," said President Ulysses S. Grant. Thus the objectives of both National and Provincial Parks were created: they were to be for the people to enjoy; an opportunity for everyone to get away from the stress of urban living to the beauty of unspoiled nature. This anthropomorphic attitude towards parks is stated clearly in the Canadian National Parks Act. "The Parks are dedicated to the benefit of the people of Canada for their education and enjoyment and they shall be made use of so as to maintain them unimpaired for future generations".

Implementation of the second part of the Act has not always been easy. Soon it was found that overuse of the wilderness areas not only defeated the objectives of Parks as a place where a person could get away from it all, but also destroyed the nature of the parks themselves. If bears interfered with humans, the bears were removed instead of the people. Campgrounds have become high density slum areas for trailers and mobile homes. In fact in the United States increased park use rose from 5% to 1400% within 30 years. Soon many US Parks were obliged to enforce restrictions on the number of people entering ecologically sensitive areas, and the original concept of "Parks for All" was turned upside down.

Today many people recognize that an anthropomorphic attitude towards conservation is not enough. Until recently Canadians have believed they have unlimited undisturbed areas that they can exploit at will. But this is no longer true. For example, very little natural prairie grassland remains because it has all been used for agriculture. Man has destroyed or altered so much of the environment he lives in that very few natural areas exist.

At last Canadians are waking up to the fact that the few natural areas that remain to them must be preserved somehow, and slowly the concept of biotic areas is replacing the anthropomorphic one. A biotic-centred area puts nature and animals first, and restricts human access so that animals, especially, are not disturbed by people. The creation of more anthropomorphically centred parks is neither the only means nor the ideal way for preserving natural areas. One society that has put theory into practice is The Nature Conservancy of Canada. Last year they celebrated their twenty-fifth anniversary. Their aim is to buy ecologically significant areas in order to preserve them. They call these sites 'Natural Heritage Areas' and they are valued primarily for their biological and physical characteristics. "The areas identified are in need of protective management and will be selected to represent a full range of diversity within each major natural region in Canada."(2)

In December 1987 the Nature Conservancy published a long range planning programme map which showed completed and progress plans for Alberta. As an example, the Jasper and Banff National Parks are extended eastwards so that the total area is enlarged and connected. If the areas around Hinton and Ghost River are included, these lands would act both as a buffer zone to the National Parks and a corridor of one natural area to another. This policy helps to protect large animals that need lots of space to move about in. If they are restricted to small pockets of land they interbreed and soon become extinct.

Although the creation of corridors that link large areas together is one concern of the Nature Conservancy, smaller areas of special interest are also considered of importance. Recently the Nature Conservancy has been donated 2000 acres of rolling foothills country not far from Calgary. It is the largest single private land donation in Canadian history. M. Cross has given his ranch of aspen forest and original grassland for management by the Nature Conservancy, and a further donation of adjacent land has also been given to the Conservancy on the "stipulation that this land must be sold to establish a trust fund to cover the costs of managing the conservation area."(3) The property has been donated "to ensure the preservation of the wildlife habitat."(4) But management consists of "offering outdoor education programs, and nature trails will be created for hikers, birdwatchers and photographers."(3) One wonders which concept will predominate: the anthropomophic or the biotic one?

Unfortunately people and wild animals simply do not mix. Perhaps management should work out a plan to establish the optimum carrying capacity of the land with relation to the number of people who can enter it without disturbing the wildlife in it. There is something to be said in favour of undisturbed, unexploited private land!

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1. The Nature Conservancy of Canada Newsletter. Fall, 1984. P.1.
2. The Nature Conservancy of Canada Newsletter. Fall, 1984. P.2.
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Author's Address:
608 - 63 Avenue N.W., Calgary, Alberta T2K 5L3.

Cinnamon Teal Near Bonnyville

Dear Sirs:

It may be of interest to you that I have spotted a pair of Cinnamon Teal at Jesse Lake at Bonnyville on two occasions this spring. I have seen one pair on the Cold Lake Indian Reserve south of Grande Centre.

We reason that they may be in the area due to the dry conditions in the south. In ten years in this location these are the first Cinnamon Teal I have seen in this area.

I have also seen Turkey Vultures almost every year, and suspect they are nesting at Ethel Lake near the Boy Scout Camp.

Michael Ellenwood, Box 1833, Cherry Grove, Alberta T0A 0T0.

Northeast Goes Finchless

ITHACA, NY - This past winter left people all across the eastern United States wondering where the birds were. Feeders went unoccupied and bags of seed bought in anticipation of flocks of winged guests gathered dust in garages and back hallways. But, for the first time ever, North American ornithologists can answer "where are the birds?" even as the winter snows linger on the ground. According to data compiled for Project FeederWatch, a continentwide bird feeder survey run by the Cornell Laboratory of Ornithology and Canada's Long Point Bird Observatory, many birds appear to have stayed north this winter in the boreal forests of Canada. However, bird numbers at feeders across the continent's midsection and in the west were on par with last winter.

The biggest gap in feeder attendance occurred among the aptly named "winter finches." This group includes such popular feeder visitors as the evening grosbeak, pine siskin, and purple finch. Both evening grosbeaks and pine siskins showed decreases of 75-100% at feeders in the northeastern and southeastern United States where last winter flocks of hundreds stretched the bird seed budgets of many families. These decreases, however, were offset by dramatic increases in the numbers of pine siskins in the northwestern U.S. and Canada and of evening grosbeaks in the northern Great Plains.

"Both siskins and grosbeaks are boom or bust species that wander nomadically across the continent, stopping wherever food is plentiful," says Erica Dunn, coordinator of Project FeederWatch. "Last winter was a boom year for them across the entire eastern third of North America. This winter they have definitely stayed north in Canada where there appears to have been an excellent supply of the tree seeds they feed upon. The relatively mild, snowless winter experienced in much of the East also probably contributed to these birds remaining farther north than in other years."

According to Dunn, "Last winter there were enough siskins for an average of seven to be counted at every bird feeder in North America throughout the entire winter. But what a difference a year makes. A few people in the northeast who were entertaining flocks of over 300 siskins every day last winter had none this year."

With some surveys estimating that 80 million people in the United States feed birds, the presence or absence of these winter finches attracts a great deal of attention. And, with annual bird seed sales now toping $1 billion, winter finches even produce economic repercussions for seed companies and farmers!

Project FeederWatch is already enlisting participants to help monitor feeder birds in the winter of 1989-90. Participants pay a $9 annual fee to cover the cost of data forms, newsletters, and postage, and must be able to identify the common birds at their feeder. To include the birds at your feeders, write to Project FeederWatch, Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, New York 14850; or call 607-254-2414. Editors: For further details, and for copies of black-and-white photo of pine siskins or evening grosbeaks, call 607-254-2414.

Brentwood Wildflowers, a Patch of Wilderness

Jannis Hare

Ten years ago, when I moved to Brentwood Heights in Calgary, I was delighted to find a small patch of wilderness at the end of my street. The hill just below Dr. E.W. Coffin School has been left in its natural state to host a large variety of native wildflowers.

The first to appear in April, the tiny, fuzzy heads of Prairie Crocus, turn the hillside into a mist of mauve. Every teacher's desk displays these blossoms of springtime, as the children find it hard to resist picking "just a few". It is also usually the children who notice the small white flowers of Moss Phlox that grow close to the ground in star-like patterns.

Amongst the poplar trees, the Wild Rose has found compatible surroundings. Confined to small areas in the past few years, last summer it burst forth across the hillside with large masses of pink blossoms. If observers look carefully near the base of the trees, they may find a few dainty Shooting Stars which bloom in June and among the grass, the deep color of Blue-eyed Grass or the dusty rose of Three-flowered Avens.

In the first days of summer, large, neat clumps of Puccoon show their small, pale yellow flowers and the dark-veined magenta petals of wild Geranium make brilliant splashes of color. Slightly deeper than the Geranium's color, large bunches of Purple Vetch catch the eye.

At the base of the hill, where there is an underground stream the white Canada Anemone was quite happy. Now that the stream has been diverted, it will be interesting to see if the flower persists. Nearby, making the pathway a prickly place to travel, the thistles grow to quite a height. Small groups of Bergamot,with their showy purple flowers, adorn this area in late summer.

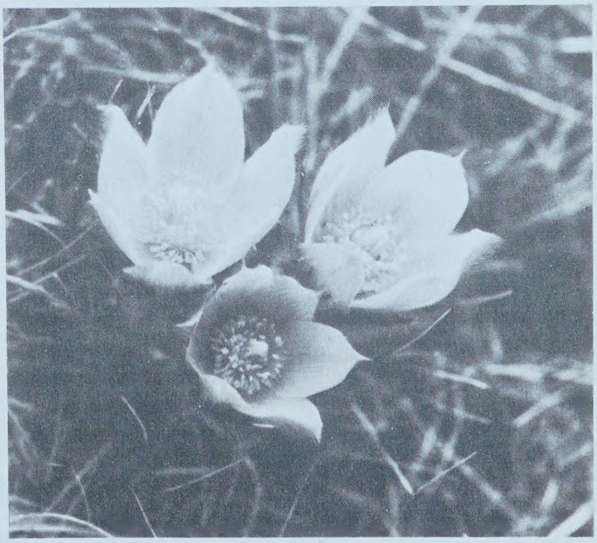
One of the favourites, the Harebell, may be found in the open areas and later on the well-known Gallardia.

Where the ground has been disturbed to plant new trees, some of the more common weed-type plants have gained a toehold. The Goatsbeard is great fun for the children when it goes to seed as they can blow its tiny parachutes out onto the wind.

It is interesting to observe how the growth patterns change from year to year. Last summer I was surprised to find several bushes of Potentilla near the top of the hill.

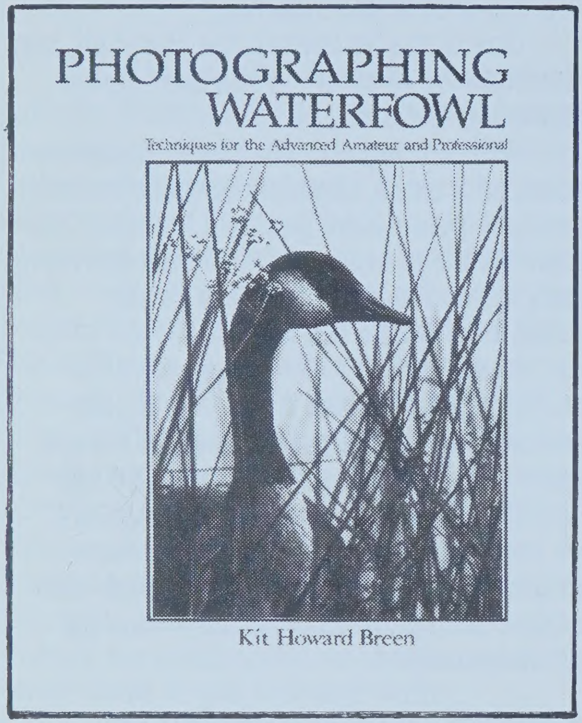
There are many other plants which I have not mentioned or have yet to discover. I encourage my neighbours to appreciate and preserve such patches of nature within our busy communities.

Author's Address:
5615 Brenner Cres. N.W., Calgary, Alberta
T2L 1Z3, phone: 284-3259.



Prairie Crocus (Anemone patens vas. wolfgangiana) (Photo: J.D. Johnson)

NATURE PHOTOGRAPHY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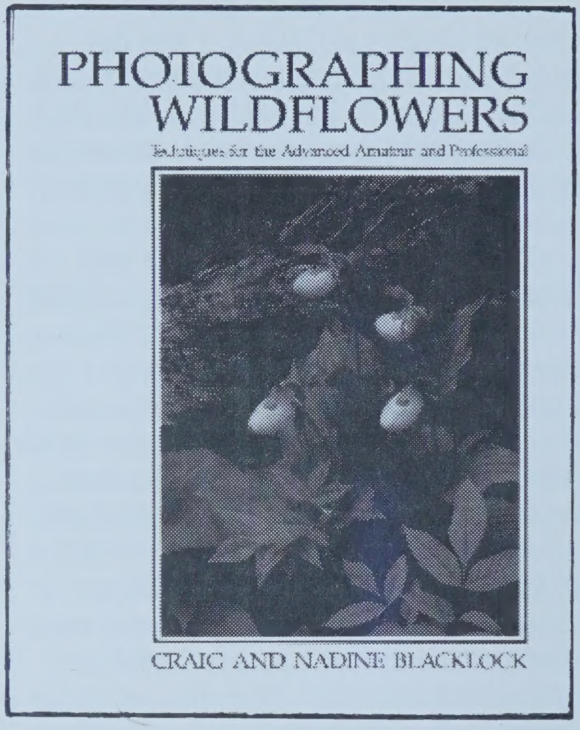
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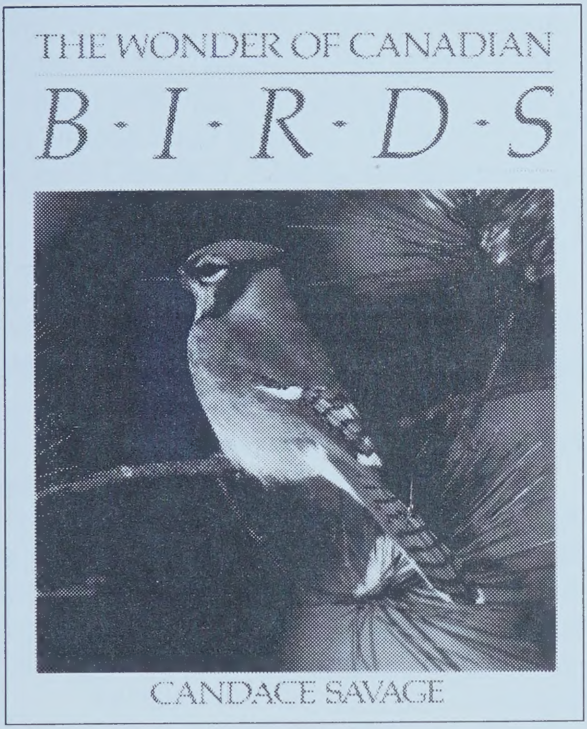

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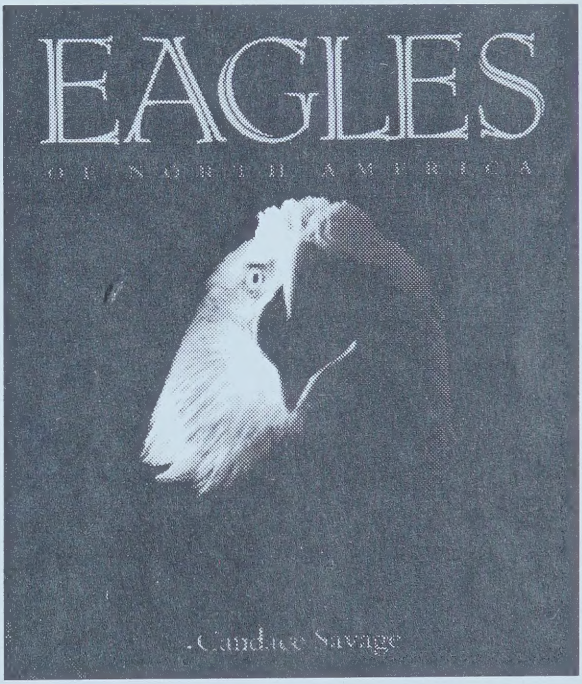

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Flowing to the Future

More than 170 delegates to the Flowing to the Future conference, May 11-13, 1989 at The University of Calgary, agreed on a number of recom mendations that may change the future of Alberta's rivers.

Following presentations on river conservation in Canada, the U.S.A. and Alberta, as well as talks on water management in Alberta, the roles rivers have played in North American literature, and the economic factors that influence river management in Alberta, delegates separated into three concurrent workshops.

The workshops focussed on rivers and river management issues in northern, central and southern Alberta. Following technical presentations by panelists drawn from industries and government agencies whose actions and policies affect river, delegates watched presentations by individuals and groups on a broad range of individual rivers.

Dr. Tim Pyrch, of the U. of C. Faculty of continuing Education, co-Chairperson of the conference, described the workshops as, "... an effort to create a blend of technical or scientific knowledge, and what I like to call people's knowledge."

It proved to be a potent combination.

Where rivers have been at the heart of some of Alberta's most bitter and divisive public debates in recent years, all three workshops involved serious and constructive discussion. Irrigators sat down with ecologists, pulp mill operators talked with anglers, urban waste managers and industrial water users shared the table with representative of downstream communities.... and it worked.

"Everyone in this room has a different set of values and priorities," said Van Tighem in his closing address. "Everyone came here for a different reason. Every one of us will go home to a different future. But we all have three things in common with each other. We all love Alberta, and her rich and beautiful landscape, sky and rivers. We all will shape and share the future of this place we love. And we all have learned from one another."

Initial skepticism on the parts of some had given away to hopeful optimism by the end of the conference. Every delegate - whether they represented industry, government water or forest agencies, conservation groups or recreationalists, appeared to have brought a sincere desire to share information and find common ground. It appears clear that many Albertans are no longer taking their heritage of rivers for granted.

The conference concluded with an unexpected address by the Hon. Ralph Klein, former mayor of Calgary and Alberta's new Minister of Environment.

****

In conjunction with the Flowing to the Futures Conference, the Federation of Alberta Naturalists held a poster contest on the theme of Rivers. Over 800 excellent entries by school children were received posing a monumentous task for the judges.

- 1st Grand Prize - Fly-fishing trip to Crowsnest River Country, courtesy of Diamond Hitch Outfitters. Winner: Becky Hofer of Botha, Alberta - 7th grader at Star Ridge School.
- 2nd Grand Prize - White water rafting trip to Jasper, courtesy of Maligne Lake Tours and the Sawridge Hotel. Winner: Lori Tews of Wetaskiwin, Alberta - 6th grader at Parkdale School.

There were 43 honourable mention winners. More complete report on the contest will be in the next issue.

Alberta Hunters to Pay Wolf Bounty of $150

Dick Dekker

In a pamphlet distributed to its 17,000 members, the Alberta Fish and Game Association (AFGA) spelled out its new "Predator Management Plan", that will allow hunters to rush into wolf control, where the provincial government has feared to tread.

AFGA plans to raise over $100,000 in donations for a trust fund intended exclusively to provide financial incentives to trappers, who would otherwise be reluctant to go after the province's 3500-5500 wolves, because fur prices are low. The hunters want 1200 wolves "harvested" each year and they are offering a subsidy of $150 per wolf. The wolf kill will be concentrated in so-called "key harvest areas", which include foothills adjacent to Banff and Jasper National Parks.

Alberta hunters have complained for years that wolves are eating too many elk and caribou, especially calves, in west-central foothills. The provincial government has been reluctant to initiate a wolf cull even when it was recommended by some of its own boilogists who believe, perhaps naively, that a periodic wolf kill can offset the negative impact on wildlife of habitat destruction, hunting and poaching.

As reported in The Journal (January 20), hunters say that the government will not go anywhere near the "political dynamite" of thinning out wolf numbers for fear of a backlash from a largely non-hunting public. Persistent protests from conservation groups hounded the govemment wolf kill in northeastern B.C., where biologists have shot 996 wolves from helicopters from 1980 to 1987 in an attempt to increase game herds for hunters and outfitters. The controversial program has given the profession of wildlife management a black eye in the perception of the public. Moreover, the B.C. wolf kill was recently called "a waste of time" by the very biologist, Dr. John Elliott of the B.C. Wildlife Branch, who did the shooting. Largely because of public opposition, the B.C. wolf kill has now been suspended for at least four years.

Wildlife Management or Mismanagement? Government predator control has had a long history in North America. In Alberta, routine wolf poisoning on wilderness lands to enhance hoofed mammals for hunters, was halted in 1966, although provincial wildlife officers continue to kill wolves by all available means near livestock zones.

Since the 1960s, wolves have occurred in near-natural numbers in all forested regions of the province, while populations of caribou, elk and moose have dwindled in the wake of destructive resource development. An exploding network of roads and trails opened up the former wilderness to hunters and poachers on trikes, bikes, snowmobiles, and four-wheel drives.

Is wildlife management in Alberta's foothills in a state of crisis? Are civil servants unable or unwilling to act decisively to protect and restore wildlife abundance? Alberta's hunters seem to think so. But why does the proposed remedy always centre on the natural predators: What our wildlife needs is protection from people! Just look at the abundance of elk as well as wolves in Jasper Park. Last February, I was observing a wolf pack asleep on the frozen Athabasca River, while 18 elk bulls, all six-pointers, were grazing on nearby flats. Fifty elk cows were visible in the distance, and on hills above the wolves were two herds of sheep, totalling 58 animals, including 15 full-curl rams!

Such paradise-like scenes should prevail in may provincial lands adjacent to the parks. Bow Valley and the Kootenay Plains should be teeming with game. But they are not. They are shot out by hunters and poachers, including Treaty Indians who have the right to kill game anytime and anywhere on crown lands.

While Alberta hunters understandably complain about low wildlife populations on the east slopes, what is the record of game management on wolf-free lands in the province? Are elk herds thriving in the Cooking Lake Grazing Preserve? No, they are not. As elsewhere, the herds are depleted by hunters and poachers. The only elk populations that are doing well in the province are those in the federal parks or on private lands, where hunting is prohibited or access controlled.

Bounties Often Fraudulent And Ineffective. AFGA's proposed wolf bounty is a step backwards in wildlife management and might backfire for the following reasons.

1. Bounties are notoriously ineffective and often lead to fraudulent practices. Trappers could be tempted to bring in carcasses from non-target areas, even from outside the province. With the large amount of money involved, unscrupulous people might use illegal means such as poison baits and aerial hunting.
2. Instead of killing off their wolves, smart trappers might try to boost their local population as a lucrative resource.
3. Trappers will concentrate their efforts along the boundaries of Jasper and Banff National Parks, where wolves are needed to keep elk herds from over-populating limited winter range.
4. Adverse media reports and publicity may cost AFGA dearly in public respect. The vast majority of Albertans do not hunt and do not want wolf control on wilderness lands, that are owned by all citizens, not just the hunters and trapper.
5. Wolf populations are resilient and make up for losses with high breeding potential. After AFGA's money runs out, or if the program is halted for other reasons, wolf numbers will bounce back with a vengeance, perhaps to higher levels than before, as was recently demonstrated in British Columbia after the Muskwa Wolf kill was halted.

What Are The Alternatives? The best managers of wolves (and their prey species) are the wolves themselves. Natural wolf populations limit their own numbers by competition and intra-specific strife, as suggested by recent studies in Quebec and on Isle Royale. Leading wildlife managers in Alaska are currently researching non-lethal methods of wolf control. The size of captive packs in the large enclosures of Dalhousie University are controlled by vasectomizing the males. It is a very simple procedure that does not interfere with breeding but prevents reproduction.

Instead of wasting a hundred thousand dollars on killing wolves in a bounty program that has to be kept up year after year in order to have some effect at all, how about investing that money in an innovative capture-and-release operation conducted by government biologists?

And lastly, if Alberta hunters are serious about wanting to restore the elk and caribou herds in our foothills, why not couple some innovative wolf management with a moratorium on hunting. Once the wildlife populations on provincial lands resemble or even outclass those in our precious national parks, careful licencing of hunting might proceed again.

In the meantime, Alberta hunters should stop crying wolf, and consider their good fortune of having access to vast areas in southern and central Alberta where there are no wolves, and where hunters are needed to keep elk, deer and moose from destroying themselves.

Author's Address:
3819-112A Street, Edmonton, Alberta T6J 1K4
(434-5474).

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Are You a Member of the Society of Canadian Ornithologists?

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Recent Publications on Alberta Natural History

Compiled by David M. Ealey, Martin K. McNicholl, and Don Albright

Birds

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Cover Photo:

Yellow Ladyslipper (Cypripedium calceolus) (Photo: J.D. Johnson)

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Volume 19, Number 3, Fall 1989

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The Federation of Alberta Naturalists is composed of natural history clubs from across the province. The Federations' aims are:

- *(a) To encourage among all Albertans, by all means possible, an increase in their knowledge of natural history and understanding of ecological processes;*
- *(b) To promote an increase in the exchange of information and views between natural history clubs and societies in Alberta;*
- *(c) To foster and assist in the formation of additional natural history clubs and societies in Alberta;*
- *(d) To promote the establishment of natural areas and nature reserves, to conserve and protect species, communities or other features of interest;*
- *(e) To organize, or coordinate, symposia, conferences, field meetings, nature camps, research, and other activities whether of a similar or dissimilar nature;*
- *(f) To provide the naturalists of Alberta with a forum in which questions relating to the conservation of the natural environment may be discussed so that united positions can be developed on them, and to provide the means of translating these positions into appropriate actions.*

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Editor: Anna Robertson
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DEADLINES for F.A.N. project reports are:

Alberta Christmas Bird Counts, January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB T2V 4H2

May Species Count—Plants, July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB T6H 3S5; *—Birds and Mammals*, July 15, Don Stiles, 20 Lake Wapta Rise S.E., Calgary, AB T2J 2M9

Compiler cooperation is greatly appreciated.

LETTERS TO THE EDITOR

Chairman, Publications Committee:

As a long time member of F.A.N., I have seen the organization take many positive turns in its growth to become a committed voice for the naturalist community in Alberta. The decision that the Alberta Bird Record is nearing extinction is not one of F.A.N.'s better moves. The thought saddens me as well as eliciting a certain degree of anger and frustration.

Brutal and gruelling, best describes the pain endured by those who nurtured the Alberta Bird Record into, what I consider, a high calibre and much needed provincial bird journal. These people are to be commended. However, those in F.A.N. who simply state, in half a page, "this will (sic) the last issue of the ABR, unless someone comes forward by August 31st", and "it is up to you as subscribers", require a little more help in promotions and human relations.

Outside the pleas in the ABR and the note that accompanied Vol. 7/2, has anyone bothered to advertise the Editor's position for the ABR? At the very least, the Publications Committee could have provided a job description with details. This should have been circulated to various groups/organizations and not just a half-page insert. Better yet, a paid advertisement in the career section of the Edmonton Journal would reach a larger audience, particularly those who are not joiners or may never have heard of F.A.N. These and other ideas in a well thought-out campaign would demonstrate the will to maintain at least the status quo and the Federation's commitment to its members. The statements made by your committee in the insert memo represent nothing more than a slap in the face to the F.A.N. membership, as well as those who have edited and subscribed to the ABR since its inception.

Surely, with the talent that exists within the membership, there is no room for a defeatist attitude until all possible avenues have been explored. Simply rolling over and dying doesn't demonstrate a strong commitment or a will to achieve greater heights, particularly now, in the midst of Alberta's environmental crisis.

Rainer Ebel
Executive Director
Alberta Forestry Association

****

Alberta Bird Record

Dear Whoever:

I find your pleas for an editor somewhat dismaying. It seems that only recently you were begging for subscribers.

The idea of a publication is great but if it is so difficult to produce or so time-consuming couldn't something be done to simplify the whole production? Failing that, it is possible to have three or four people do the work instead of over-taxing one so often that you cannot keep him or her at the helm?

Just asking for an editor to replace someone who doesn't have time to do the job leaves a lot of questions unanswered. Just what do you expect of one?

Some requirement of the contributors that the articles be typed in the proper format and be printer ready should bring the job down to a manageable size. No regional recorder should be expected to be the editor also.

I could give some time to the publication but no way could I give the time to type, edit, assemble, print, mail, keep addresses updated and all the rest of it by myself.

Let me know if you need me to do a portion of it but I am not available very often nor for very long at any one time.

Daphne N. Richey

****

Response from Pat Clayton, F.A.N. Publications Committee.

Dear Daphne:

Thank you for your letter expressing concerns about Alberta Bird Record. I am replying to it as you seem to have some misinterpretation of what is involved in its production and its history.

The Alberta Ornithological Records Committee was the dream of well known and respected ornithologists based mainly in Calgary. They requested and got permission to be a Committee of the Federation of Alberta Naturalists sometime in the mid 1970's. The Committee had difficulty structuring itself as a working group and at different times considered its members to be the arbitrators of Rare Bird Sightings and then the custodians of all bird sightings with all that that implies. Along those lines they indicated they wished to publish a separate newsletter and undertook to be wholly responsible for it: content and cost. The F.A.N. committee designation was retained as the A.O.R.C. members, still based mainly in Calgary, wished to continue to have province wide recognition., The F.A.N. treasurer continued to keep their books for them.

The A.O.R.C. for all intents and purposes ceased to exist in 1987. The last two editors of the Alberta Bird Record continued to receive reports of sightings, write up the highlights and, in a laudable attempt to make the A.B.R. more readable and attract subscribers, included articles. Unfortunately, membership, costs, sightings and workload did not balance. The Editors tried every way they knew to get help and you are the only person who has come forward with even a limited offer of assistance. I think this, along with the fact the sponsoring committee (A.O.R.C.) disintigrated says much about the nitty-gritty of the state of record keeping.

On the positive side, the A.O.R.C. pioneered the idea of an Alberta Bird Atlas (see Endangered Species Conference Proceedings). Some of their ideas and methods were incorporated into the province wide, vastly expanded Atlas concept. Others, especially their grids, proved unworkable when matched to habitat maps in use with Alberta Fish and Wildlife (non-game section). Hopefully, when the Atlas is finished in 1991, many of its volunteers will continue to be involved in birding and ready to submit ongoing records. To whom, and how, is the question which F.A.N., as a sponsor of the Atlas, will have to address soon.

To return to the Alberta Bird Record, compilers send in records to the Editor. Some are typed and some hand written. The Editor writes up the highlights as seen provincially, prepares the text, gets the whole camera-ready and selects the printer. F.A.N. arranged, with great difficulty, to get 2nd class mailing privileges out of Canada Post for the A.B.R. This means volunteers in Edmonton had to collect the printed material from the Bus Depot, sort, bag, label and transport it to the Main Post Office. A job that took 6 man hours on a good day. When it became clear that the expanded A.B.R. was costing $500 + per issue to print, the publications committee undertook to get the issue printed in Edmonton which added that load to what the volunteers were already doing on behalf of the A.O.R.C.

(which no longer exists!).

I understand from the last Editor the material is stored at the Inglewood Bird Sanctuary in Calgary. Compilers can send their sightings to F.A.N. where we can store them until someone comes forward. The Editor of the Alberta Naturalist would entertain a request to publish "highlights" - if someone would write them. AN readership in the past has not responded well to long lists of sightings - even the Christmas and May All Species counts are carefully highlighted and compressed to get around this difficulty.

If you would like to help out - at least till the end of this year, Ross forwarded some of the compilers summaries to the F.A.N. office. They are available to be "highlighted".

Please let me know if you would like to undertake this task. Office phone number is 453-8629.

Pat Clayton
Publications Committee

Ed. Note: The Alberta Bird Record is still looking for a new editor or editors.

Bolete Mushrooms *(Photo: P.S. Debnam)*

PRESIDENT'S PAGE

FORESTS FOR THE FUTURE

A sustainable approach to the management of Alberta's forests.

Presented at the Board of Directors Meeting in Athabasca, September 23-24, 1989.

Rob Gardner

WHY THE FEDERATION IS INTERESTED

The Federation of Alberta Naturalists has been the organized voice of naturalists across this province since 1970. We represent eight corporate member clubs and a total of 1233 members. Our concern for the outdoors extends far beyond species of wildlife to include natural habitat and communities. We do not advocate turning back the clock to the nineteenth century, but we believe that people and wildlife must coexist for our mutual benefit.

The Federation takes pride in offering positive alternatives rather than simply rejecting other suggestions. Our first-hand knowledge of forests enables us to present a balanced point of view.

We hope to present the opinions of the general public, by gaining access to the government planning process with experienced, informed volunteers. Our organization represents many concerned but unaffiliated citizens across the province.

PURPOSE OF THIS DOCUMENT

This document lays out the principles of forest management which the Federation supports. These will guide the Executive in responding to issues which may arise.

Members of the naturalist community hold diverse opinions which differ in detail, while following the same general trend. For the sake of consistency, we have based our discussion on the World Conservation Strategy. The objectives contained in this publication have been endorsed by many countries, including Canada. It is the closest we have to a consensus on how to maintain a healthy environment.

THE FOREST

The "green zone" of north and west Alberta provides opportunities of enormous value. This immense area offers social value as the last forest wilderness in North America, economic value as a delicate but poorly understood ecosystem. Albertans must husband this resource carefully.

However, the forest has undergone great changes. Habitat has been fragmented by countless seismic lines, and roads reach into most regions. Logging and agricultural clearing have resulted in extensive flooding and local erosion, especially in the Peace River area. Albertans must act now to ensure that development proceeds in a sustainable fashion, with consideration for all the values of the forests.

The vast areas of Alberta do not comprise one homogenous forest. The different regions have been classified according to the dominant types of trees. These species themselves reflect the complex combination of climate, topography, animals and other plants. Together, they form a unique association whose workings can only be guessed at. To facilitate discussion, we crudely call these "forest regions".

Each forest, as a unit, has characteristics which suit it for certain uses. The five main forest types, as described in Rowe's "Forest Regions of Canada", are summarized below. The most appropriate use for each, from the Federation's point of view, is also included.

Boreal Forest Region

This vast region stretches across the northern half of Alberta. The landscape is generally rolling, with large rivers draining to the northeast. On the southern boundary, the aspens merge gradually with the black and White Spruce more typical of the northern areas. This large zone has been subdivided, with several different sub-regions represented in Alberta.

Mixedwood Sub-region includes the largest of Alberta's forested area. As the name suggests, a variety of trees can be found, including aspen, balsam poplar, white spruce, black spruce, white birch and tamarack. Generally, the proportion of deciduous trees increases to the south, as the Boreal Forest grades into the Parklands.

Aspens, with their quick regeneration, dominate in the recently disturbed sites, while spruce is found in the older stands. Peat bogs, with black spruce and tamarack, occupy the lowlands, with birch and poplar growing on the sandy uplands. The variety of trees creates a variety of habitats for arboreal birds. Warblers, in particular, are abundant here. Several species depend on the large stands of mature coniferous trees. Also, members of the weasel family depend on the old, undisturbed forest.

Trapping has traditionally been a major industry. Low prices now reduce the attraction of this trade. Tourism has potential, but has not been properly developed. Winter recreation could be well received by the Edmonton market.

The enormous area, relatively good access and gentle slope make this region attractive to the forest industry. With proper planning, logging can be carried out with acceptable damage. Reforestation must preserve the unique blend of species found at that site.

The Hay River Sub-region, to the northwest, shows the effects of more severe climate, where black spruce predominates even on much of the upland sites. This forest growth is less vigorous.

The sandy soils south of Lake Athabasca and the lowlands of the Peace-Athabasca Deltas support relatively small forest. Much of these sub-regions lay within Wood Buffalo National Park. However, some excellent stands of white spruce can be found along the lower Peace River.

Lodgepole pine, aspen and balsam poplar characterize the Lower Foothills zone, which covers the lower slopes in the northwestern parts of the province. This fire-adapted community has a relatively high tolerance to disturbance, and can probably tolerate logging better than any other forest type. These areas are subject to extreme flooding and erosion problems though. Agriculture is practical in the southern part of this region when the trees have been removed. This will, of course, result in less regeneration for future logging.

The Upper Foothills Sub-region indicate the gradation from Boreal to Subalpine Forest. Conifers dominate, with lodgepole pine, white spruce and sub-alpine fir being most common.

Parklands Forest Region

On a national scale, this region has been included as a sub-region of the Boreal Forest, but its local importance requires its separate consideration here. Aspen groves are interspersed with meadow of fescue grassland. The rich soil, moderate rainfall and cool temperatures create the most fertile farmland in Alberta. Consequently, much of the forest has been cleared. The trees are considered a liability here, since they do not occur in economic quantities.

The rapid deforestation, coupled with draining of marshes, has caused a severe drop in waterfowl breeding habitat. The grassland component has been almost totally destroyed. The last few sites still containing both grass and aspen must be protected.

Subalpine Forest Region

In Alberta, the Subalpine Forest Region is found in a fairly narrow band on the eastern slopes of the Rockies. Subalpine fir and lodgepole are the major trees, with grassland found on south-facing slopes and in the lower valley. More than any other region, this is noted for the abundance and variety of large mammals. Mountain sheep, bears, wapiti and mule deer attract many visitors to the numerous parks. Logging is quite disruptive due to the steep slopes, although the rate of regeneration is quick compared to that of softwoods farther north.

This zone is located near centres of population and at the headwaters of our rivers. This suggests that the best use of this forest is for tourism and watershed protection. Logging may be an appropriate management tool to ensure a mixed-age stand which can regenerate itself, but should not be an objective in itself.

Montane Forest Region

The Montane Forest Region of Alberta is the smallest forest region of Canada. The stands of douglas fir, lodgepole pine and limber pine are surrounded by grasslands, making great ungulate habitat. The small size of both the trees and the stands make this forest of negligible value to logging companies. All of this region should be used for grazing or recreation, for which it is ideally suited.

NEED FOR PLANNING

We urgently require long-term planning for our forests. Experience in the southern part of the province has shown how valuable resources can be rapidly consumed while generating little in economic benefits. Many user groups have a direct stake in this area, and all Albertans have an indirect stake.

We must realize that the sensitive northern ecosystem will recover slowly from mistakes, and that new technology makes sensitive management possible. In the past, we did not have these benefits.

Projects of this scale will impact the entire province. Both local and distant communities want to be involved, and have important perspectives. Their support can only be gained by allowing people to participate from the very beginning.

OUR VIEW OF THE FUTURE

What should northern Alberta look like in 20-50 years? What do Albertans want? We feel that the answer to these questions must be debated in public, with considerable opportunity for all Albertans to be heard. The "full employment, industrial" model now advocated by the Alberta Forest Service is to simplistic, and ignores many of the region's stengths.

The Federation of Alberta Naturalists offers these suggestions, which indicate the type of landscape we advocate. Many more ways of implementing the World Conservation Strategy will come to light when Albertans receive the chance to discuss this situation.

Our view of the future includes:

- a vibrant forest ecosystem with abundant and diverse wildlife, and a stable economy
- forest with stands of mixed ages, and having the same overall species composition as now
- a low human population, in keeping with the low carrying capacity of this sub-arctic life zone. However, the population will be stable, without major fluctuations
- a mixed economy, making the most of the local resources - tourism, trapping, forest industry, agriculture, oil & gas, commercial fishery
- native people sharing their experience with urban visitors (guest ranches, summer camps)
- a varied landscape, with uplands, bogs, old-growth forest and clear rivers
- a network of protected areas joined by wildlife corridors
- considerable secondary industry, based on the regional resources, such as paper production and the education of workers. (The training of foreign workers in environmentally sensitive development can become a viable industry.)
- some intensely farmed stands of trees, balanced by large tracts of untouched wilderness

I personally feel the key element should be "stability". The resources of the area are fixed, and so should our use. The boom and bust of mega-projects will be replaced by the steady improvement of the efficiency of existing industries. The economic base will slowly diversify as more appropriate "products" are developed. However, the landscape, the population and the economy will not vary dramatically.

WORLD CONSERVATION STRATEGY

The World Conservation Strategy presents an internationally accepted structure which can be related to our particular situation. Because of its broad perspective, it allows the development of policies dealing with situations which have not yet come up. Each of its three main objectives clearly relates to our forests, as shown in this section. The Federation of Alberta Naturalists has relied on the World Conservation Strategy for conceptual guidance.

Maintain ecological processes

The forest ecosystem must be maintained, with its inherent stability and efficiency. The succession of different species should continue without tampering. This natural progression contains a full range of species at stages. The value of both young and very old growth is recognized.

To achieve this, representative samples of each ecotype should be preserved. They should be studied in detail to better understand the complex interaction within communities. In some areas, forestry activities can approximate the effect of fire, while providing resources and employment. However, reforestation should recognize that succession can not be rushed. Adequate time should be allowed for the natural process of regrowth to occur. The second cut should be scheduled when the second growth is about as old as the first growth was when cut.

Forestry methods need to be revised so harvesting methods minimize the disturbance to the land. Some of the regulations which need to be reviewed include the size and shape of cutblocks, logging equipment, both season and frequency of logging, and control of public access. These and other questions must be addressed on a site-by-site basis.

Maintain genetic diversity

The government should establish an inventory of all species, similar in scope to the bird atlas. This baseline data will allow assessment of the effects of future development. At present, the distribution of even common species is poorly understood. Those species susceptible to disturbance should be identified, and plans to safeguard them must be implemented before any disturbance occurs.

Every effort should be made to prevent the introduction of non-native species. Reforestation should use only species native to the particular site, and preferably use seed from the same areas. No hybrids or foreign species should be planted.

All species should be recognized as part of the ecosystem, and should not be removed. Even those species considered pests have their purpose, and should be respected. We have the opportunity to allocate only surplus fibre production, while allowing for the consumption by wild animals, such as snowshoe hares and bark beetles.

Establish sustainable economic development

All use of our forests by Albertans must be carried out so as to allow this use to continue indefinitely. In some areas, this will mean that people will take the place of wild fire in removing the wood. Great care is required, however, to ensure that uses do not conflict.

We must ensure that each area is used to its greatest potential. In some cases, this will not mean "multiple use". Some uses, such as watershed protection, are not compatible with consumptive uses. In many cases, multiple use is quite feasible, and should be encouraged. We should treat all users equally; wildlife is not a "second class" use for forests.

To be sustainable, all industries must completely clean their wastes. This means revegetation of logged land and the removal of pollution. The use of our rivers for assimilation of organic material can be justified to a certain extent. Assimilation or dilution of chemicals can not be condoned because they are not part of any natural process. Dilution is a wasteful use of our rivers which restricts other, more valuable use of the water. In addition, the dilution is often reversed by the complex process of bio-accumulation. Our wildlife should not pay the cost of pollution control.

Each industry should be required to pay a fair market value for resources removed from the land, with all harvesting based on an accurate rate of recovery.

All subsidies should be removed. Economic development must be achieved without artificial support. In this way, we may judge the true relative value of the various resources.

ROLES OF EACH PARTICIPANT

Each participant in the management of our forests has certain strengths, and particular agenda. Together, we can form a strong team. The roles of each group, as we see them at this time, are summarized below:

Government
- coordinate imput from other sources
- prepare management plans
- administer land-use decisions
- conduct research based on ecological principles

Private sector
- provide capital & management skills
- get a fair return on investment
- operate projects
- train suitable workers

General Public
- provide guidance
- provide labour

CONCLUSION

The Federation of Alberta Naturalists celebrates our province's forests. Indeed, they give the land a variety and texture which cannot be measured economically. The very liveability of Alberta is determined by the thin green blanket protecting the soil, conserving the water, and soothing our souls.

At the same time, we realize that resources can be used without serious effect. The essential consideration is that they be consumed no faster than they are replenished. Anyone wishing to remove resources must determine this rate before starting.

The Federation looks forward to working with representatives of both government and industry to establish the future of our forests.

INITIAL RECOMMENDATIONS TO ALBERTA FORESTS, LANDS & WILDLIFE

1. Respond to each recommendation in the Environmental Council of Alberta's 1979 task force report on the forest industry, stating how each was implemented, or why not.

2. Incorporate all aspects of the World Conservation Strategy into Alberta's forest management practices.

3. Remove all subsidies from forest industry development.

4. Ensure that all proponents conduct an Environmental Assessment on the project's total effect (mill and logging operation) on both the natural and social environment.

5. Improve the public participation process, using that employed by the Energy Resources Conservation Board as a model. All proposals and hearings should be advertised provincially.

6. Forest Management Areas should be given out by tender, not by negotiation, with detailed specifications set by the Forest Service.

New Direction for River Management in Alberta

Kevin Van Tighem

More than 170 delegates to the Flowing to the Future conference, May 11-13, 1989 at The University of Calgary, agreed on a number of recommendations that may change the future of Alberta's rivers.

Following presentations on river conservation in Canada, the U.S.A. and Alberta, as well as talks on water management in Alberta, the roles rivers have played in North American literature, and the economic factors that influence river management in Alberta, delegates separated into three concurrent workshops.

The workshops focussed on rivers and river management issues in northern, central and southern Alberta. Following technical presentations by panelists drawn from industries and government agencies whose actions and policies affect rivers, delegates watched presentations by individuals and groups on a broad range of individual rivers.

Dr. Tim Pyrch, of the U. of C. Faculty of Continuing Education, co-Chairperson of the conference, described the workshops as, "... an effort to create a blend of technical or scientific knowledge, and what I like to call people's knowledge."

Where rivers have been at the heart of some of Alberta's most bitter and divisive public debates in recent years, all three workshops involved serious and constructive discussion among often-opposing interest groups. Irrigators sat down with anglers, pulp mill operators talked with ecologists, urban waste managers and industrial water users shared the table with representatives of downstream communities.

All three workshops, independently, came back with the recommendation that Alberta become a full participant in the Canadian Heritage Rivers System. This program, coordinated by the federal Department of Environment, recognizes and protects rivers of national heritage importance. Every province and territory in Canada now participates in this program -- except British Columbia and Alberta.

The idea found support from an unexpected quarter - Peter Melnychuk, Alberta Environment's Assistant Deputy Minister for water resources, told delegates that his department would support Alberta's participation in the program.

Other widely-endorsed recommendations included:

- endorsement of the concept of "user pay": those who use water should pay the full cost of providing it, rather than the nominal flat rates that prevail at present. This was seen as an important water conservation measure.
- changes to the current Environmental Impact Assessment (EIA) process used to assess projects that may have impacts on rivers. Delegates felt that the EIA should come into play earlier in the planning process, before irrevocable political commitments have been made; that there should be more opportunities for meaningful public input; and that one of the options to be assessed should be the option of not allowing the project to proceed.
- there should be easy public access to information on issues affecting rivers and the environment.
- economic analyses of water and river projects should be more comprehensive, taking more clearly into account the recreational, cultural, aesthetic and spiritual values of healthy, free-flowing rivers.

John Thompson, a Calgary-based economic consultant, pointed out that his best analysis of available data suggests that most of Alberta's water is being used for the least economic purpose - irrigation farming - while recreational values are generally undervalued and poorly studied.

In a closing address, Kevin Van Tighem - land use chairman of the Federation of Alberta Naturalists and co-Chairperson of the conference - argued that rivers should be managed separately from water. Since everything that society does within a watershed finds itself reflected in the health of a river, he said, rivers should be managed as barometers of sustainable development, rather than as plumbing systems.

Van Tighem challenged delegates to decide, individually, what good news they would like to announce at the next _Flowing to the Future_ conference (to be held in 1991 at the University of Alberta) and then to do everything in their power to make that news come true.

The conference concluded with an unscheduled address by the Hon. Ralph Klein, former mayor of Calgary and Alberta's new Minister of Environment.

Klein agreed that mistakes have been made in the past - although he pointed out examples where river management has improved - and that mistakes will likely be made in the future. While acknowledging that river, and water, management is political and controversial, he endorsed the conference and offered his support, if he is still in his current position, for the next conference. His talk, billed by Tim Pyrch as the "opening address for the 1991 _Flowing to the Future_ conference," was well-received by conference delegates.

"Everyone in this room has a different set of values and priorities," said Van Tighem in his closing address. "Everyone came here for a different reason. Every one of us will go home to a different future. But we all have three things in common with each other. We all love Alberta, and her rich and beautiful landscape, sky and rivers. We all will shape and share the future of this place we love. And we all have learned from one another."

Initial skepticism on the parts of some had given away to hopeful optimism by the end of the conference. Every delegate - whether representing industry, government water or land agencies, conservation groups or recreationalists, appeared to have brought a sincere desire to share information and find common ground. It appears clear that many Albertans are no longer taking their heritage of rivers for granted, and are committed to working to ensure their future health and well-being.

Harebell (_Campanula rotundifolia_)

(Photo: P.S. Debnam)

LETTER TO THE HONOURABLE DON GETTY

This letter has, as yet, not been answered. Members are encouraged to write their own letters to the premier.

March 31, 1989

Hon. Don Getty
Premier of Alberta

Dear Mr. Getty:

The Federation of Alberta Naturalists is concerned about the future of Alberta's threatened woodland and mountain caribou populations, especially in light of increased forest commitments to pulp and paper companies in northwestern Alberta.

We are aware that your Fish and Wildlife Division released a draft caribou recovery plan three years ago that has yet to be implemented. This fact was pointed out by our Land Use Committee chairman, Kevin Van Tighem, in a letter to the Edmonton Journal last month. Les Cooke, in a rebuttal that was also printed in the Edmonton Journal, assured readers that wildlife would not suffer from forestry developments. However, he failed to offer any specifics, and he totally bypassed the whole question of caribou protection.

In light of the absence of any public commitments on the part of Forestry, Lands and Wildlife to preserving core caribou habitat areas from industrial activities, and in light of the urgency of the issue, we have a number of specific questions to ask of you, and we would appreciate specific answers. Both this letter and the response will be published in a future issue of Alberta Naturalist, our quarterly journal.

Hooker's Thistle (Cirsium hookerianum)
(Photo: P.S. Debnam)

1. Will the proposed Berland Resources Road be approved, and what alignment will it follow? Given clear proof that road access leads to illegal and legal kills of caribou, the Federation of Alberta Naturalists is opposed to this project.

2. If the Berland Resources Road and other new trunk roads are to be constructed in the Berland and Little Smoky watersheds, will there be comprehensive fish and wildlife studies conducted in advance to help determine the least damaging road design and location?

3. Why are there still no wildlife sanctuary designations for Highway 40 and the Huckleberry Tower Road, three years after they were recommended? We note that it didn't take that long to decide to commit one-third of Alberta's forested lands to pulp and paper production.

4. When will these road corridors, and other road corridors in the area, be given sanctuary status?

5. Can you please provide specific details on the habitat protection measures that will be implemented on the five critical caribou ranges identified by your biological staff in 1984: We are particularly interested in seeing two of these - Prairie Creek and the Little Smoky headwaters - given ecological reserve or natural area status to ensure that at least this small part of the whole area will retain natural, unmanaged forest where caribou habitat needs are not in any way compromised.

6. What measures are being implemented to limit or eliminate motorized access to caribou habitat? We strongly support measures to eliminate off-road vehicle use, and gating of forest management roads to control access.

7. Please describe any specific research that is being done to determine the impact on past forest cutting on lichen regeneration, and what monitoring programs are being put in place to measure the long-term impact of the massive conversion of wilderness to roaded, managed forest that is now taking place?

8. What is your present position on proposed wolf kill measures in northwestern Alberta?

Given the vagueness and motherhood quality of Les Cooke's public response to Kevin Van Tighem, and the lack of specifics in material thus far made available to the people of Alberta, we fear that caribou and other old-growth wildlife values may have been written off already. I trust that your responses to the above questions will help to set some of our concerns aside.

Sincerely,

Rob Gardner, President
Federation of Alberta Naturalists

A CODE OF CONDUCT FOR BIRDERS

* Avoid trespassing and damaging property. Use gates, where available, and remember to close them.
* Show respect for people's privacy. If access to private property is needed, make contact with owners first during reasonable hours to request permission.
* Keep noise to a minimum to avoid harassing both birds and landowners.
* Stay on existing trails and paths to minimize habitat destruction. Many birding spots have fragile ecosystems.
* Avoid disturbing nesting birds.
* Keep observation periods short.
* If possible, do not use tape recorders - especially during the breeding season, or in heavily birded areas.
* Give information freely. What is an ordinary sighting to you may be a rarity to someone else.
* Be helpful and considerate. Assist in bird identification, share your knowledge and defer to others when in doubt.

(Reprinted from Nature Canada, Fall 1988.)

COMMENT COLUMN

ENVIRONMENTAL CONSERVATION: SPECIAL SITES OF SCIENTIFIC INTEREST (SSSI)

Patricia Stansfield

The main motive for creating National Parks was their intrinsic beauty to man. This anthropomorphically centred idea has slowly changed towards a biotic approach, where nature is appreciated for itself. The drive towards creating an extensive Prairie Grassland Reserve recognized other basic reasons for conserving nature from the exploitation of man.

The Prairie Conservation Action Plan is sponsored by the World Wildlife Fund, Canada, and their publication states a more mature philosophy for the preservation of natural areas: "Little native prairie remains in its natural state and what remains is rapidly disappearing. - - - Canadians need to ensure that native prairie, with its wild plants and animals, survives in the west and is conserved for its intrinsic values, from which this and future generations can benefit."1. The key words have changed from 'beauty' to 'intrinsic' and 'benefit'.

Without plants man would die. We depend entirely on plants for all the food we eat. Only plants can change the energy of the sun into food. This food is used to keep the plants themselves alive, and the surplus is utilized by animals and man. Man either exploits plants directly or indirectly, when he eats animals. When plants are over-exploited, deserts are formed, and man is the best desert maker the world has ever known. On a larger scale, once ecosystems are lost through over-exploitation, they can never be recreated. A large number of different animals use a variety of plants for their food, but once these ecological units are exploited, they disintegrate very rapidly. The intrinsic value for preserving natural areas is that our life depends on plants.

Modern agriculture depends on sophisticated man-made hybrid crop plants that have been artificially bred from native plants to give a better yield. But these monocultures have little resistance to changes in climate or disease. Most resistant hybrids are only effective for five to fifteen years because the pathogens attacking the crops are so versatile. They produce new strains of pests that can attack the crops which these hybrid plants are unable to combat. When an artificial monoculture is wiped out, agriculturalists start to hybridize new strains from a stock of native plants. This explains one of the benefits that native plants, and therefore natural areas, can bestow on mankind.

In large natural areas native plants have a large genetic diversity or gene pool which allows new species to evolve that are naturally resistant to diseases or climatic changes. But the changes take place over a long period of time, well beyond man's life span. Moreover, they are almost impossible to predict. This is where the benefit to future generations comes in, but we are not in a position to dictate the future results. At the moment the wisest policy is to leave nature alone so that species of plants and animals revert to a natural balance that is beneficial to all.

Many people will make an effort to prevent the destruction of some natural area which still allows the growth of some beautiful eye-catching plant which is on the verge of distinction. But it is not only the beautiful orchids that are disappearing rapidly. Many other species, including some native grasses, are becoming rare. And who is man to decide which plants to preserve;

which to destroy? Those obnoxious weeds that belong to the Chenopodium family contain chemicals that are potent against some human diseases. But their flowers are inconspicuous and many have an unpleasant smell. Animals often depend on specific plants for their food supply, and their extinction invariably kills off the animals that depend on them. As Wildlife Canada puts it: ''without habitat there is no wildlife. It is as simple as that.''2. And habitat means food and niches to live in and breed.

The World Wildlife Fund, Canada, has inaugurated a five year plan this year. Based on previous inventories of the remaining native and prairie parkland areas, it aims at creating one large representative area in each of the four major prairie ecoregions. In Alberta ten such regions have been identified. (See Table I).

One means of creating these ecological reserves is ''to encourage balanced use of private lands that allows sustained use of the land while maintaining and enhancing the native biological diversity of the prairies.''3. Most interesting of all is the Onefour Research Station near the Cypress Hills that will ''promote research relevant to prairie conservation.''4. No prairie ecosystem today is natural in the sense that many animals such as the buffalo and the bear that used to be part of the ecosystem disappeared years ago. Any natural reserve needs management, and the goals upon which this management should be carried out are not even known. Extensive research is needed in order to understand the ecological basis for managing the preservation of plant and animal life. Management must manage change because vegetation is never static. But successional change is very slow, so the goals of management must be projected over hundreds of years.

Ecological reserves must go hand-in-hand with the world concept of research and science to investigate more about them. Hence the concept of SSSI: Special Sites of Scientific Interest - and Investigation. It is pathetic that research and management of natural ecosystems is so low down on the agenda of priorities that it is almost non-existent. As an example, Banff has a large, expensive and flourishing Art Centre, but there is nothing comparable for research and education in the management of Ecology.

TABLE I
ECOREGIONS OF ALBERTA

Ecoregion areas should be protected around the following sites:

Ross Lake Ecological Reserve
Handhills Ecological Reserve
Dune Point Area
Rumsey Ecological Reserve
Wainwright Dunes Ecological Reserve
Canadian Forces Base, Suffield
Lost River Ranch/Milk River
Elk Island National Park
Onefour Research Station
Kennedy Coulee Ecological Reserve

For more information about SSSI, contact:
World Wildlife Fund Canada
60 St. Clair Ave. E. Suite 201
Toronto, Ontario M4T 1N5
Tel: (416) 923-8173

REFERENCES

1. ''Prairies Conservation Action Plan 1989-1994''
World Wildlife Fund, Canada. P.3
2. Ibid. P.5
3. Ibid. P.30
4. Ibid. P.34
5. Ibid. O.13

Author's Address:
608 - 63 Ave. N.W., Calgary, Alberta T2K 5L3.

MARY LORE: 14th LORAN L. GOULDEN MEMORIAL AWARD WINNER

Beryl Hallworth

MARY S. LORE (B.ED., B.A.)

Mary Shankel Lore was born in Brooks, Alberta, March 28, 1921. She moved with her parents three weeks later to a prairie farm and ranch at Lathom. The family added four brothers and they all rode four miles on horseback to a one room school to receive their education. Mary attended Bassano High School and Garbutts Business College, Calgary. She pursued careers as a bookkeeper, stenographer and secretary until 1963, at which time she applied for a bursary and then attended the University of Alberta. She enrolled in the Faculty of Education and became a teacher of business education, first at James Fowler High School, and then Department head at John Diefenbaker High School, and six years later at Crescent Heights High School. At the end of a 20-year career as a teacher she took early retirement in 1984.

Mary has been keenly interested in travel and photography. She has travelled on every continent except Antarctica. An interesting summer of travel and education was spent in Tokyo, Japan in 1969, attending Sophia University studying the socio-economic history of Japan as well as the Buddhist religion, the latter being essentially the history of Japan. For her summer efforts she received a credit at the University of Calgary where she was also enrolled in a Bachelor of Arts program. Other travel highlights have been: the Mackenzie River by ship in 1972; a week at Bathhurst Inlet in 1978; eight weeks in South Africa'a animal parks in 1984; and two weeks hiking in Switzerland in July, 1987.

Mary has contributed her time to many organizations including Christian education endeavours with youth groups, and at camps with the United Church of Alberta from 1941 to 1963. She was active in the founding of the Trail Riders of the Canadian Rockies and the Skyline Hikers of the Canadian Rockies as they became independent from the sponsorship of the Canadian Pacific Railway in 1961. She was the recording secretary for both organizations for two years and the editor of their joint magazine for ten years. She acted as camp director for both associations at their annual summer camps, and recalls meeting very interesting people from all over North America on these mountain rides and hikes.

Mary's interest in nature was encouraged by her grade four teacher, who had a one room school of 20 pupils. A student presented the teacher with the first prairie crocus bloom of the season. The teacher drew this to everyone's attention, then recorded the date and the name of the plant on the blackboard as well as the name of the person who brought in the plant. She organized a plant collecting competition and assisted with the identification of the plants, encouraging the students to be responsible for the correct habitat description of the plants. By the end of the school season in June, the students had collected, identified and pressed nearly three hundred plant specimens.

Two prizes were awarded for the most plants collected and Mary received one of them which was a flower identification book, "Flower Guide to the Wild Flowers East of the Rockies", revised edition by Chester A. Reed, with 320 flowers in color, painted by the author, published by Doubleday, Page and Company, Garden City, New York, 1927.

Some of Mary's favourite flowers were the early-blooming Prairie Crocus (Pasque Flower), the Hoodii Moss Phlox and the wild Prairie Rose which bloomed in profusion during the month of June.

In 1952, Mary joined the Calgary Naturalists, a group of about 30 amateur naturalists. The founder was Mary Barkley, assisted by W. Ray Salt of Edmonton. The President was Julie Hrapko, now of Edmonton, and the secretary was Margaret Cope Offen, now of Christchurch, England. It was replaced by the Calgary Bird Club in 1957 and Mary joined it in 1966. She became active on the executive when it became the Calgary Field Naturalists' Society in 1969, at the time when Ian Halladay was the president. She was a director, and then the treasurer for three years, and then the president from 1975 to 1977. In 1976 she was appointed a director from the Calgary Field Naturalists to the Federation of Alberta Naturalists. She was delegated to the position of Environmental Education Director, which she actively pursued until 1980. Mary contacted school students, with the assistance of school librarians and principals, with nature subjects for essays in annual competitions. One year she held an environmentally oriented poster competition. Prizes were awarded for the best essays and posters, and the reponse was about three hundred entries annually. In 1980, on the occasion of the province of Alberta's 75th anniversary, the essay topic was "Should Alberta choose a mammal emblem, which animal would you recommend and why". This drew a response resulting in 500 essays recommending over 30 different mammal species. The favourite was the White-tailed Deer, of which many students said, "The white-tailed deer is beautiful like Alberta and should be the mammal emblem". The second was the mule deer, the third was the bison or buffalo (the students expressed the opinion that Man owes the Buffalo an apology) and the coyote was fourth. The results were tabulated and presented to the Board of Directors of F.A.N., but they did not support the recommendation to press the Minister of Culture for a mammal emblem in 1980. It had taken F.A.N. eight years to pressure the previous minister to approve the Great Horned Owl as the bird emblem of Alberta.

Mary was the President of the Federation of Alberta Naturalists from 1978 to 1980. She was a director and a vice-president of the Canadian Nature Federation from 1977 to 1979 and attended the annual meetings and conferences. She managed to make contact with every club in her region of the prairie provinces and Northwest Territories during her term as vice-president. She would have liked to continue her association with the Canadian Nature Federation but her career as a teacher was not compatible with the meetings held by them. However, the experiences and the numerous projects in the interests of education of the environment and conservation were numerous. Mary was impressed with the dedication of the people involved and counts it a privilege to have been able to work with such people.

Another of Mary's special interests has been photography. She obtained her first 35 mm camera for color film in 1949. She is currently president of the Calgary Color Photo Club and she has just completed the fortieth anniversary history of the CCPC, the anniversary being February 7, 1989. She has been president of the Foothills Camera Club on two occasions, a director of the Prairie Region of Photographic Arts, a zone director for the National Association for Photographic Arts, and the national NASPA president in 1980. Mary continues her interest by showing her travel programs to organized groups upon request.

Special awards that Mary has received include: the Charles DeTro Business Education Award for outstanding achievement in the field of business education, nominated by her peers in 1975, two honorary awards presented by the National Association of Photographic Arts, and life membership in the Trail Riders and Skyline Hikers associations. In May 1988 she was nominated for the Arts and Culture Award (for forty years in amateur photography as an organizer, educator and judge of photography) of the YMCA-sponsored Women of Distinction annual awards. Mary considers the greatest honor of all to be the Loran Goulden Memorial Award which she received January 10, 1989, from the Federation of Alberta Naturalists, for her contribution to education and conservation on the natural history of Alberta and Canada.

Author's Address:
3715 Underhill Place N.W., Calgary, Alberta
T2N 4G3.

Loran L. Goulden Memorial Award Nominations

Nominations for the Loran L. Goulden Memorial Award for outstanding contributions to natural history in Alberta are sought at all times, but to be considered for the 15th Annual Award should reach the Chairman of the selection committee by 1st December 1989. The 15th award will be presented at the Annual General Meeting of the Federation of Alberta Naturalists in January 1990.

Nominations may be for contributions in any field of natural history within the province of Alberta. All previous nominations of persons who have not yet received the award will be considered, but nominators of such persons are encouraged to update these nominations. Previous Awardees have been: *Dick Dekker, W. Ray Salt, Charles D. Bird, Robert Lister, Joy Finlay, John M. Powell, Lois Fenna, Martin McNicholl, Fred Schutz, George Freeman, Tim Myres, Kerry Wood, Marg Reine and Mary Lore.*

Nominations should be sent in writing to the Chairman or given to another member of the committee (Margot Hervieux, Grande Prairie; Mary Lore, Calgary; Graeme Greenlee, Lethbridge; John M. Powell, Chairman Loran L. Goulden Memorial Award Selection Committee, 5828 - 143 Street, Edmonton, Alberta T6H 4E8 (435-7006).

CLUB NEWS

LETHBRIDGE NATURALIST SOCIETY

Graeme Greenlee

The club annual picnic was held September 10th at the Popson Park group picnic site. This is in the Oldman River Valley south of the University of Lethbridge, on the west side of the river. Following a potluck supper, members were invited to enjoy an evening hike in the river valley.

The first fall evening meeting will be held October 13th, and this will be the annual meeting where a new executive is introduced and members bring their own slides.

At the November 10th meeting, Frank DeBoon, formerly a ranger in Writing-on-Stone Provincial Park and now residing in Fernie, B.C., will speak on wildlife and nature photography.

The December meeting will consist of the Lethbridge and Waterton Park annual Christmas bird counts.

Indoor meetings are held on the second Friday of October, November, and January through April, 7:30 p.m. in Room 1028, Cousins Building, Lethbridge Community College, 3000-College Drive, South, Lethbridge.

Ed. Note: News from other clubs was not received. Please send Club News for the Winter Issue by November 1, 1989. Thankyou.

ANNOUNCEMENTS

BIRDQUEST

The Canadian Nature Federation, with the Canadian Wildlife Service, is developing a bird study programs for youths. The programme organizer is looking for donations of 35 mm slides illustrating characteristics for field identification such as bills, feet, wing bars, and eye rings. The slides will become the property of the CNF and will not be returned. Please send your slides to: Jannis Klein, Conservation Assistant, Canadian Nature Federation, 453 Sussex Drive, Ottawa, Ontario K1N 6ZA.

Evening Grosbeak

(Photo: Edgar T. Jones)

ENVIRONMENTAL LAW CENTRE

The Environmental Law Centre together with The Legal Education Society of Alberta is pleased to present an important conference on Environmental Law: "INTO THE FUTURE: ENVIRONMENTAL LAW AND POLICY FOR THE 1990's" October 19th and 20th, 1989, Edmonton, Alberta.

The Environmental Law Centre is an acknowledged expert in the area of environmental law and policy. For almost a decade they have provided information and assistance to the general public and have undertaken timely legal research projects on important issues. They have been involved in legal review processes, and sat as members on numerous panels and committees. They are pleased to share their expertise and experience by bringing together legal experts who will take a hard look at what the law is now and what it is likely to become in the future. Key note speakers will also identify current trends and issues in law and policy as we enter the 1990's. You will learn about government regulation, common law, business and industry, public interest litigation, and the legal profession.

Contact the Legal Education Society of Alberta at 2005 IPL Tower, 10201 Jasper Ave., Edmonton, Alberta T5J 3N7 or phone 420-1987 or 1-800-282-3900 for more information.

1989 Bighorn Award Winners

On March 2, six Albertans were honoured for their lifelong commitment to wildlife conservation. This year's recipients were: Louis Bartle - educated his neighbours in the Smoky Lake area about the importance of conserving forests and wildlife. Frank Lafoy - a 24-year officer with Alberta Forestry and Fish and Wildlife, focussed his energy on helping beavers through transplants, nursing injured animals back to health, and teaching youngsters about trapping and conservation. Ann and Sandy Cross - donated 800 hectares of land in Calgary for wildlife. Wendy Slator and Colin Weir - established the Alberta Birds of Prey Conservation Center near Coaldale.

New Wildlife Strategy Announced for Alberta

At February's Alberta Fish and Game annual conference, Minister LeRoy Fjordbotten announced a new wildlife conservation stategy for Alberta. The strategy comprises five major initiatives targeted at current challenges facing wildlife management in Alberta.

The first initiative is a comprehensive anti-poaching campaign designed to attack one of the most serious wildlife management problems in Alberta. The plan includes significantly increasing the number of district staff over a three-year period; a major public awareness campaign to promote the Outdoor Observer Program using a new Report A Poacher toll-free number - 1-800-Poacher, effective September 1; a reward program to encourage citizen reporting of infractions against wildlife and their habitat; and new regulations to prohibit hunting adjacent to selected roads to reduce human disturbance in sensitive wildlife areas.

The second part of the strategy focuses on land management and is directed at securing greater participation from landowners and land managers in achieving provincial wildlife conservation objectives. This initiative involves expansion of Landowner Habitat Program; enhanced crop damage compensation for farmers to encourage them to increase their efforts to maintain and expand habitat; start-up of the

Bull Elk

(Photo: G.L. Holroyd)

North American Waterfowl Management Plan, to which the Alberta Government has committed $36 million over the next 15 years; and expanded application of the integrated forest management approach throughout northern Alberta.

Fisheries management will also be highlighted through the development of a provincial fisheries management strategy, improvements to existing fish hatcheries and stocking programs, and construction of a new walleye rearing pond to augment the output of the Cold Lake Fish Hatchery.

The strategy will also address non-game species management. Alberta Forestry, Lands and Wildlife will participate in the Restoration and Enhancement of Nationally Endangered Wildlife (RENEW) Program, and will commit $300,000 to the Prairies For Tomorrow Agreement, which will protect critical habitat and manage endangered species in the prairie and parkland regions of the Province.

In making these announcements, the Minister also suggested that further wildlife-related initiatives are forthcoming.

(Reprinted from Forestry, Lands and Wildlife Newsletter March 1989.)

National Symposium on Urban Wildlife

A national symposium on urban wildlife is scheduled for 11-14 November 1990, at the Stouffer Five Seasons Hotel, Cedar Rapids, Iowa. Organized by the National Institute for Urban Wildlife, the symposium will focus the attention of urban planners, landscape architects, developers, city administrators, natural resources biologists, elected officials, and others on the opportunity and need for wildlife and nature conservation in metropolitan America. For further information, please contact Dr. Lowell Adams, Symposium Program Chairman, National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, Maryland 21044.

The National Institute for Urban Wildlife is a private, nonprofit scientific and educational organization dedicated to research, management, and conservation education programs and activities for the benefit of people and wildlife in urban, suburban, and developing areas.

Grasslands Trust Funds

On April 1, 1989 the CNF launched the Grasslands Trust Fund program in cooperation with the Nature Conservancy of Canada and the Canadian Parks Service. The Project is designed to accelerate the purchase of privately owned or leased lands within the 900-square-kilometre area of Grasslands National Park. Every dollar donated by the private sector is tax deductible and will be matched by the federal government, and all money collected will be earmarked for the purchase of land within the approved park boundary.

The mixed grass prairie to be protected by Grasslands National Park harbours one of the largest concentrations of endangered wildlife found anywhere in Canada. Twenty-two species on Canada's endangered species list can be located in this one habitat.

Even before the program was officially launched, the Saskatchewan Natural History Society, the CNF's representative affiliate for the province, pledged $1,000 to the Fund from the proceeds of January's Prairie Conservation and Endangered Species conference.

The CNF will provide each donor with a tax receipt, supplemental information and a certificate of recognition. Pamphlets and posters are being made available to the public through national parks across Canada.

As affiliates of the CNF, this is a fine opportunity to directly influence the development of a national park and protect the unique habitat of the mixed grass prairie. For more information on the Grasslands Trust Fund, please contact the Canadian Nature Federation, 453 Sussex Drive, Ottawa, Ontario K1N 6Z4, (613) 238-6154.

(Reprinted from CNF newsletter Spring 1989).

Volunteers Needed for Natural Areas Program

(AB FLW) The Natural Areas Program, a division of Alberta Forestry, Lands and Wildlife, is looking for volunteer stewards to assist in patrolling, inspecting and reporting on selected natural areas throughout the province.

Currently, 112 sites have been designated and another 145 sites have been reserved as potential natural areas for the program. Each area has been placed into one of three categories: education, recreation, and conservation. The 257 sites encompass a total area of 103,509 hectares. The objectives of the program are to enhance the management of natural areas through public participation, and enhance public understanding of natural areas. Alberta Forestry, Lands and Wildlife is responsible for providing technical support and site management including any required enforcement on site. For more information, contact: Sandra Myers, Public Lands Div., Alberta Forestry Lands & Wildlife Petroleum Plaza (S), 9915 - 108 St., Edmonton, AB T5K 2C9. Phone: 427-5209.

Fish And Game Formalizes Non-Game Support Program

(AFGA) The Alberta Fish and Game Association is Alberta's largest and oldest conservation organization. Since the early 1900's the association has worked on many programs for the benefit of fish and wildlife game resources. While many of these programs have had a positive impact on non-game wildlife and non-game wildlife management, no formal non-game program had ever been instituted by the association.

In 1989, The Alberta Fish and Game Association plans to strengthen its commitment to non-game management by 1) developing a funding base for a public education program about non-game wildlife and their habitats, 2) promoting the establishment of a non-game stamp which would ultimately lead to the provision of funds to be used for non-game management and 3) encouraging the public to participate and sponsor non-game wildlife activities.

With the generous support of Esso Resources Canada Ltd., public education materials are being prepared to help launch the program. Central to the non-game program will be the recognition of the need for habitat maintenance, enhancement and preservation required by all wildlife species for survival. For more information, contact: Alberta Fish & Game Association, 6924-104 Street, Edmonton, AB T6H 2L7. Phone: 437-2342.

Peregrine Falcon Recovery Plan

Canada's first approved recovery plan has been published. The anatum Peregrine Falcon Recovery Plan which was approved in principal in 1986 includes 10 priority areas for management activity including population monitoring, pesticides, protection of the gene pool, preserving habitat, releases, protection from human disturbance, predators and disease, public awareness and research. The objective of the plan is to establish by 1992 a minimum of 10 terrestrial anatum pairs in each of 6 zones and by 1997 to have 10 pairs in at least 5 zones, a minimum of 15 or more natural young. Copies of the plan in English or French can be obtained from Distribution Section, Canadian Wildlife Service, Department of the Environment, Ottawa, K1A 0H3. (catalogue No. CW-66-97/1988E).

Birds of B.C.

We have received notification of several bird books of interest to birders new and experienced. The Royal British Columbia Museum is offering _The Birds of British Columbia_ Vol. I and II (Loons through Woodpeckers) for $49.95 plus $5 shipping and handling when ordered before November 30, 1989. After publication, the cost rises to $99.00. To reserve your copy, write to the Friends of the Royal B.C. Museum, 675 Belleville Street, Victoria, B.C. V8V 1X4. Visa and Mastercard are also accepted.

(Volume III, Perching Birds, is scheduled for publication in 1993).

Harrowood Books (3943 N. Providence Rd., Newton Sq., PA. 19073, U.S.A.) is offering bird clubs a 20% discount on orders of 5 copies or more of the publication _South American Birds_ by John S. Dunning. Send $28 U.S. for paperback or 38 U.S. for hardcover plus $2 per book for shipping.

Harrowood is also selling Birders' Daily Field Checklists, based on the 5th edition of the A.O.U. Checklist for $10 U.S./100, $35 U.S./500, and $55 U.S./1000. Order #44 -Birds of Western North America, postpaid.

INTERESTING SIGHTINGS

Terry Damm, a Canadian Park Service warden stationed at Sunwapta Warden Station in Jasper National Park, and his wife Marie, sighted a male Bobolink (Dolichonyx oryzyvorus) in full breeding plumage on May 24. Shortly afterward a dark bird, similar in morphology to a Common Cowbird but sporting a large dusty-yellow throat patch landed on the lawn. His mate was lighter in colour with no throat patch. The two birds were not identified. Do readers have any suggestions?

Mr. Damm can be contacted at Box 1417, Jasper, Alberta T0E 1E0.

PLAINS "HIGH"

Dennis Baresco

The arid countryside of south-eastern Alberta is filled with excitement for the persistent birder, but is one of the best kept secrets in the birding world. The dry plains are dotted with irrigation lakes, yielding such unusual sightings as Black-necked Stilts, White-faced Ibises, and, a first for the area, a pair of nesting Caspian Terns at Rattlesnake Coulee, discovered on June 4 by John Gallimore. A Snowy Egret spent several days at Police Point Park, Medicine Hat, in 1988. In a land often viewed as monotonous, birding "highs" are a surprisingly common occurrence.

One such high has been the discovery (July 7, 1988) of nesting Sage Thrashers less than forty kilometers south of Medicine Hat. The nest site was occupied again in 1989, with three young. How many fledged in the last two years is not known. There is some indication that the nest may have been deserted this year. A check on June 22 showed it to be empty. The signs of birders were much in evidence as the bushes leading to the site were broken and trampled, exposing the nest. While the fate of the nestlings is unknown, it illustrates that, at times, the greatest threat to the bird that "dares to be different" is from birders in search of evidence or photographs.

We can only hope the same fate does not befall a pair of Ferruginous Hawks who, for at least the last two years, have chosen a highly unusual spot to rear their young. On a treeless, only slightly rolling terrain, they have situated themselves in a slight depression. The 2 metre wide nest is planted in a bed of sagebrush and cactus. In 1988, three very active nestlings were near the fledgling stage; this year, two are active, although there appears to be a third. The nest is west of Medicine Hat, no more than twenty metres from a major highway. Let's hope that they remain undisturbed!

Author's address:
Lwr Apt. 2235 Victoria Cres NW, Calgary,
Alberta T2M 4E4.

The Waterton Natural History Association

The Waterton Natural History Association was established in 1983 as a non-profit organization dedicated to the promotion of greater understanding and appropriate use of Waterton Lakes National Park. The Association works co-operatively with the Canadian Parks Service and identifies it's goals as being:

1. To provide and publish materials gelevant to Waterton/ Glacier International Peace Park.

2. To provide funds for projects undertaken to enhance Waterton Lakes National Park.

3. To sponsor special events and services for the further enjoyment and education of the park visitor.

One of the Association's most successful activities is the Waterton Heritage Centre. The Heritage Centre is a renovated firehall which houses interpretive exhibits depicting the natural and cultural history of the area. Visitors to the centre enjoy the family activity corner, changing historic displays, a nature bookstore and a small art gallery which features many talented local artists. A long-term goal of the W.N.H.A. is to expand and redevelop the present Heritage Centre.

The Association also sponsors the Waterton Heritage Education Program. For three summers now the program has offered a variety of courses to outdoor enthusiasts and brings in well-known authorities as instructors. Several of the courses in 1988 were Birding with Dr. Jim Butler, Bears with Dr. Charles Jonkel, Wildflowers with Dr. Keith Shaw and Human History with Dr. Brian Reeves. The courses vary from one to several days in length.

If you would like more information on the Waterton Natural History Association you can contact them at Box 145, Waterton Park, Alberta T0K 2N0.

The True Carex rostrata (Cyperaceae) in Alberta

Graham C. D. Griffiths

According to the Flora of Alberta (Moss and Packer 1983), Carex rostrata Stokes (beaked sedge) is a common sedge found in marshy places throughout Alberta. This interpretation was called into question during 1987 investigations of Coyote Lake (53°16'N 114°32'W), a site at the western end of Leduc County proposed for conservation. We found there two obviously distinct species, both identifiable as rostrata according to the Flora of Alberta. In the biophysical report on the site (Griffiths and Griffiths 1987), these were provisionally referred to as "rostrata" and "sp. cf. rostrata" (unfortunately reversing what now proves to be the correct application of the name rostrata).

The correct names for the two species have been established through correspondence with Carex-specialists Drs. P.W. Ball and A.A. Reznicek. The common species in Alberta should be called C. utriculata Boott. The longstanding application of the name rostrata to this species in North American floras is erroneous and incompatible with descriptions of rostrata in European floras. The second species present at Coyote Lake (called "sp. cf. rostrata" in our biophysical report) is the true rostrata. The two species can be readily distinguished by their foliage, as follows:

The true Carex rostrata on shore of Coyote Lake (with Calla leaves in background), August 13, 1987.

(Photo: Deirdre E. Griffiths)

Leaf blades strongly glaucous (appearing papillose under the microscope) on upper (adaxial) surface, dark green beneath, 1.5 - 4 mm wide ... C. rostrata Stokes

Leaf blades bright green on both sides (non-glaucous, appearing smooth under the microscope), (4.5-)5-12(-20) mm wide ... C. utriculata Boott

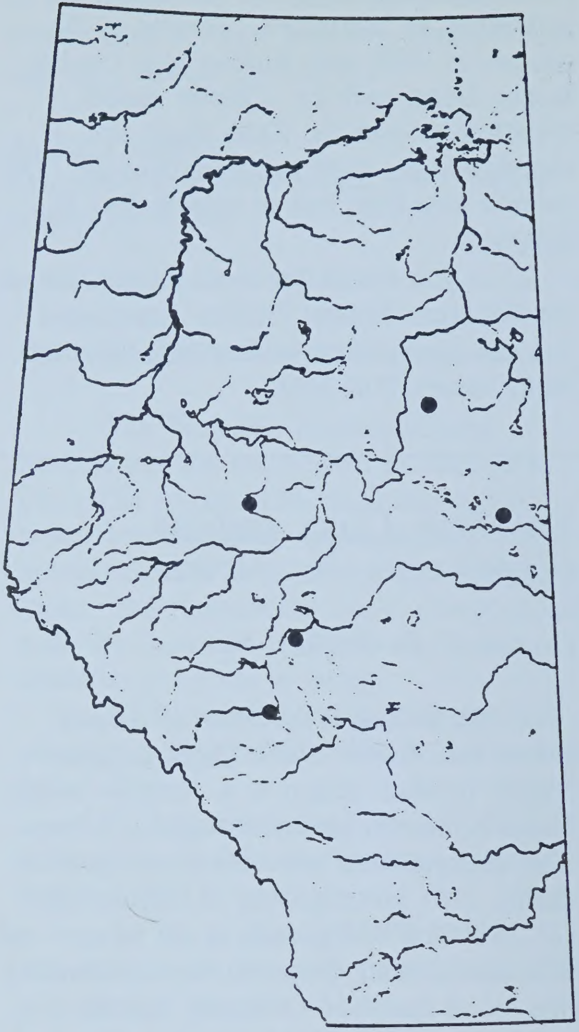
The confusion over the application of

the name rostrata in North American literature was first reported by Reznicek in a talk at the 1985 Annual Meeting of the Botanical Society of American (published in abstract; Reznicek 1985). Reznicek is in process of preparing a detailed taxonomic revision of North American material of C. rostrata and related species. In the meantime, I present here the available information on the true rostrata in Alberta.

It is particularly important that the distinction between the true rostrata and utriculata be drawn in investigations of peatlands, since the two species evidently have different ecological requirements. In the Coyote Lake district the true rostrata is found on quaking or floating peat in association with C. lasiocarpa Ehrh., while utriculata grows in shallow water on firm substrate in association with C. aquatilis Wahlenb. and C. lacustris Willd.

The great majority of specimens identified as rostrata in Alberta herbaria in fact represent utriculata. Therefore, the almost universal distribution of "rostrata" in the province indicated by map 278 in the Flora of Alberta refers almost entirely to utriculata. The only Alberta records of the true rostrata are as follows:

Coyote Lake (53°16'N 114°32'W, SW33-49-4-W5,elev. 820 m); common in quaking/floating peat (with Carex lasiocarpa, Menyanthes trifoliata and Calla palustris) along lake shoreline, becoming less abundant with increasing distance from water's edge; also found in floating peat at the centre of a depression 0.5 km NE of the lake (with Carex lasiocarpa, C. diandra, Menyanthes trifoliata and Triglochin maritima, elev. 838 m); several specimens collected on July 22 and August 13, 1987 by D.E. Griffiths, G.C.D. Griffiths and B. Kohli, deposited in University of Alberta herbarium,; determined by P.W. Ball and B.A. Ford.



Localities for the true Carex rostrata in Alberta.

Rocky Mountain House Area: 8.8 miles W of North Saskatchewan River crossing on Hwy. 11, 3.7 miles N on side road and 1 mile W on cutline (52°28'N 115°12'W, elev. 1010 m); in rich string fen (flarks: Menyanthes trifoliata, Carex lasiocarpa and Scorpidium scorpioides; strings; Larix laricina, Betula pumila and Tomenthypnum nitens); col-

lected August 12, 1976 by D.G. Horton (no. 6830); deposited in University of Alberta herbarium; determined by P.W. Ball and B.A. Ford.

Swan Hills (25-66012-W5, elev. 1310 m), August 27, 1967; record from list of determined specimens received from A.A. Reznicek.

Carex utriculata in wet depression, 3 km S Uncas, Strathcona County, August 18, 1984.

(Photo: Deirdre E. Giffiths)

Iron River Area, NW of Bonnyville (54°25'N 110°55'W, elev. 580 m); in patterned fen; collected July 20, 1982 by P. Lee and B. Hamrell; deposited in herbarium of Provincial Museum (no. B 86.98.1); determined by G.C.D. Griffiths.

Crow Lake Ecological Reserve, SW of Fort McMurray (55°46'N 112°05'W, elev. 700 m); collected June 21, 1983 by D. MacIsaac; deposited in herbarium of Provincial Museum (no. B 85.2.453); determined by G.C.D. Grifiths.

Since there are records for only five localities, the true C. rostrata qualifies for inclusion in the Alberta list of rare vascular plants according to the criteria applied by Packer and Bradley (1984). Whether the species is genuinely "rare" (i.e. highly local) or merely underrecorded in Alberta remains unclear. According to information from Reznicek, the species has a wide boreal distribution across North America. So additional finds may be expected in Northern Alberta.

Acknowledgements

I am most grateful to Peter W. Ball (Department of Botany, Erindale Campus, University of Toronto) and Anton A. Reznicek (University of Michigan Herbarium, Ann Arbor) for identification of Carex specimens and much information in correspondence. John G. Packer and Brij Kohli (Department of Botany, University of Alberta) provided valuable discussion and access to herbarium facilities. Studies of the fauna and flora of the Coyote Lake district were conducted under contract with Alberta Forestry, Land and Wildlife (Natural Areas Program).

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Author's Address:

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BOOK REVIEWS

Nose Hill A Popular Guide.

Beryl Hallworth (ed.). 1988.
Calgary Field Naturalists' Society, Calgary, Alberta.
133 pp. $5.50, soft cover.

Considering the lengthy controversy over the establishment of Nose Hill Park and the apparent recent resolution of the impass, the publication of this book could not have been more timely. It is intended as a general guide to the geology, archaeology, and natural history of the area. The Introduction includes a concise statement on why the hill should be saved. The rest of the book is divided into chapters covering geology, archaeology and history, habitats, flowering plants (including grasses), mushrooms lichens, mosses, skippers and butterflies, birds, mammals, a species checklist, and concludes with eight plates of color photographs. Scattered throughout the text are numerous simple, yet effective, line drawings. Technical terms are generally well explained where necessary. The book could have benefited from the inclusion of an index, as it is difficult to quickly track down specific species in the text without it.

The level of detail presented from chapter to chapter is quite uneven. This is due in part to the varying amount of expertise amongst the contributors, but I do think a greater effort could have been made to upgrade the information presented in some of the chapters. Some I found particularly interesting, such as the chapter on archaeology and history, and mushrooms. The chapters on geology, skippers and butterflies, birds, and mammals are also generally well done, although I was most surprised to find out that the muzzle, crown and hind neck of the American Badger are dark green (p.103)! I think the author meant to say grey. The comments on identifying marks should prove helpful to those reading the bird section. However, the paragraphs on "How Birds are Adapted for Flight" would seem to be quite irrelevant for a book such as this. Although the information presented in the flowering plant chapters is generally complete, accurate, and sometimes interesting (especially the meaning of some of the scientific names), I found this section of the book the most tedious to read because the format hardly ever varies from species to species and the constant repetition of the common and scientific names in this lengthy section wears on the patience. I also think the capitalization of common names has been overdone.

The chapters on habitats, lichens, and mosses leave something to be desired, either because of general content or inaccurate statements. The habitat section gives little information that is not also presented in the flowering plant section. It should have been elaborated or eliminated. The lichen and moss sections are quite brief, but this is not surprising considering the generally inhospitable nature of Nose Hill to these plants. Perhaps it was my mindset when I was reading these sections, but I had some difficulty with interpretation. If you read the text literally, herbs could be considered to be lichens or mosses because they do not have any "woody tissue" either. If memory serves me correctly, lichens have a greater role in breaking down rock into soil than do mosses. Candelaria concolor is a dwarf foliose lichen, not a crustose species as stated in the text. Tortula ruralis is a moss as likely to be found on rocks and in prairie as in aspen groves as the text would lead you to believe. I also feel very sorry or Dr. Conard. He really should change his name to Conrad because this seems to be how it is cited in almost all reference lists.

There are a few inaccurate statements in other parts of the text as well. The leaves of Saskatoon are distinctly toothed in the upper part, contrary to what it says on p. 40. Broomweed does indeed have disk flowers, despite comments to the contrary on p. 61. The inclusion of both Castilleja cusickii and C. lutescens as synonyms for C. septentrionalis on p. 119 is unnecessary. The species of concern on Nose Hill is almost certainly C. lutescens. C. cusickii is a rare species in Alberta, restricted to the extreme southwestern corner of the province. I also think the size ranges given for some of the species are a bit generous. I am looking forward to the day when I see my first 2 m high Tansy Mustard! The continual flip flop between Imperial and metric measures (even between successive species in the mammal list) is most annoying. Use of one or the other, or both together, would have been fine, but not the continual switching back and forth between them. Aside from some rather peculiar punctuation in the Further Reading sections, the text is freer from typographical errors than many I have read. I found seven, but none are serious enough to affect readability.

The species checklists should prove to be a handy reference for users of this book. The flowering plant list follows the revised second edition of the Flora of Alberta, although there is one slip up where the old name for Common Knotweed, Polygonum aviculare, is listed instead of the current name, P. arenastrum. Scientific names for the mushrooms, vascular plants, and butterflies are reasonably well up to date. The same cannot be said for the mosses and lichens, something to consider in future revisions.

The subject matter covered in this book is indeed wide-ranging and I think it accomplishes its intent of being a popular guide to Nose Hill rather well. It is definitely a neat, informative, and easily portable reference source, well worth its most modest price.

J. Derek Johnson

North American Owls -Biology and Natural History.
Paul Johnsgard 1988.
Smithsonian Institute, Washington, D.C.
295 pp.

The book is divided into two parts - "Comparative Biology of Owls", and "Natural Histories of North American Owls" (part 2). Preceding the narrative in Part 1 are a series of paintings of owls by Louis Agassiz Fuertes (one by Mark E. Marcuson), and several photographs of owls by the author and others. All nineteen species of North American owls are illustrated - some more than once. For purposes of identification, this supplements the "description" and "identification" sections of the Life Histories in Part 2. Though we personally have always preferred Allan Brooks' paintings to those of Fuertes, each illustration used is certainly worth a thousand words, as the saying goes.

This is a book for the dyed-in-the-wool birding enthusiast - for the scientist, or student of Ornithology. There is little charming or anecdotal about the text. Consider here an exerpt from another book, North American Birds of Prey - by Alexander Sprunt - published 1955 by Harper & Brothers, sponsored by The National Audubon Society. Referring to the Great Horned Owl - The great naturalist Ernest Thompson Seton wrote of this species: "...all that I have seen of them - their untamable ferocity ... their magnificent bearing, their objection to carrion, and strictly carnivorous tastes - would make me rank these winged tigers among the most pronounced and savage of the birds of prey". There is a paucity of this kind of description in Dr. Johnsgard's book - the prose is factual - precise - "metric"! Beginning birders may find it a little tedious, but all can certainly learn a great deal from this book. One can sense the enormous amount of research, study, and compilation that Dr. Johnsgard has put into the preparation. There are seventeen pages of bibliography! The tables and figures in Part 1 are particularly interesting and well done.

The range map for each species gives a good idea of where the owl can be found, but each seems to be only approximate. According to the appropriate range maps, we should be more likely to find an Eastern Screech Owl than a Northern Saw-whet Owl in the Cypress Hills. In reality, the reverse is true.

Of particular interest to us are the sections in the Life Histories on the weights of all the owls mentioned (in grams, of course, but we metric non-fans have learned to translate fast). An estimate is given even of the egg weight.

In summary, this is not a book for those who are only mildly interested. Many keen birders, however, will find it useful. At the very least, no public library should be without a copy.

Wilbur Tripp

Monarch Butterfly *(Photo: J.D. Johnson)*

Attracting Backyard Wildlife - A Guide for Nature Lovers. Bill Merilees. 1989. Whitecap Books Ltd., Vancouver, BC. 176 pp. $12.96, soft cover.

The idea of intentionally sharing one's backyard with bats, bumblebees and butterflies is a relatively new one; the American-based National Wildlife Federation first popularized the concept in the mid 1970's. *Attracting Backyard Wildlife - A Guide For Nature Lovers* is a book that reflects this growing awareness of, and appreciation for, urban and backyard wildlife. The book, produced in and for British Columbia, was supported by the British Columbia Fish and Wildlife Branch, Ministry of the Environment. It is encouraging to see that governments are finally realizing (some sooner than others) that wildlife is more than deer and Ring-necked Pheasants.

This book is divided up into twelve chapters, with the first ten dealing with some aspect of wildlife gardening. Following the introductory, generic chapter, butterflies and bug gardening is discussed. While most wildlife gardeners will be less than enthusiastic about trying to entice ants, bumblebees (nestbox plans are included!) and hornets, the chapter also discussed how to set up a butterfly garden and a backyard pool.

For Albertans interested in getting started in wildlife gardening, this chapter introduces a problem that we often find in literature produced outside the province - many of the plants and animals discussed are not found in and/or are not hardy to Alberta. Other suggestions, like building backyard pools out of concrete, simply do not work very well in a climate as harsh as ours.

Chapter 3 (Gardens for Small Mammals, Reptiles and Amphibians) is most interesting, as it introduces the concept of viewing nocturnal backyard visitors and is filled with such novel ideas as "toad holes" and artificial burrows for rabbits and hares.

Chapters 4 through 7 deal with wildlife gardening through the seasons. While they are all informative, I found Chapter 4 (Spring) to be a little sparse on details (the author invites those who want more information to write to him directly). I also found the following recommendations debatable, at least for Alberta:

-wooden nestboxes should not be stained or painted. Since we have limited access to the cedar products that are so easily acquired in B.C., we are stuck with using (usually poor quality) plywood that requires a treatment with linseed oil or stain.

-bluebird or swallow boxes should be placed 2-5 m above the ground. This makes them

too high to easily monitor. Most nestbox trail operators in Alberta place their boxes on fenceposts about 1.5 m above the ground.
-House Sparrows and starlings both require large entrance holes. In Alberta, sparrows have been known to use boxes with an entrance hole smaller than 1 1/2" (38mm) and starlings can easily enter an entrance hole of only 1 5/8" (42mm).
-use triangular or oval holes to discourage starling or sparrows. This is a new one to me, and I would recommend that field testing be done before this recommendation is accepted as a solution to the sparrow/ starling problem.
-woodpeckers, chickadees and nuthatches will build their own nestboxes (should read "cavities") if a suitable snag is present. This gives the impression that woodpeckers will only be attracted to yards with dead trees. Several primary cavity nesters, including Yellow-bellied Sapsuckers, Downy Woodpeckers, Hairy Woodpeckers and Red-breasted Nuthatches will excavate cavities in living trees.
-the sizes of nestboxes should be reduced so they more closely resemble natural cavities; larger floor space is preferable, if only because it enables the nestlings to develop in a more healthy environment.
-clean out boxes in the spring. In Alberta, it is much easier to clean out the boxes in the fall than to try to struggle through snow banks to get to them in the spring.

No mention is made of attracting cavity nesting ducks to a backyard nestbox. In Alberta, duck box trails are becoming increasingly popular with farmers and acreage owners who live near rivers or lakes.

I am concerned and disappointed that the author has not cautioned against using strong sugar water solutions in hummingbird feeders, as there is evidence to suggest that strong solutions may cause liver damage. For this reason, I continue to recommend using a mixture of 4 parts water to 1 part sugar solution (a solution that has already been mixed equal parts sugar and water, boiled, then cooled. It should also be mentioned that red food coloring should not be used because it may actually be toxic. Perhaps we need to be reminded now and again that the health and well-being of the birds we attract is far more important than the sense of enjoyment or entertainment we get from having them visit our feeders? The author could also have mentioned in this section that using cooking oil on the feeder portals will effectively prevent bees and wasps from getting at the sugar solution.

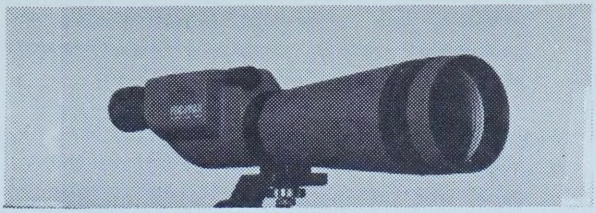
The chapters on summer and fall gardens are informative and full of such neat ideas as putting goldfish out in a garden pond for the express purpose of attracting herons and kingfishers. On the downside, I looked in vain for an answer to a question I get asked all the time -"How do I prevent Yellow-bellied Sapsuckers from destroying the birch tree in my backyard?"

The winter bird feeding section offers little for Albertans -understandable since our winter climate is so different from that of the west coast. It is especially interesting to note that the Common Redpoll, a species that is usually very common at Alberta feeders, is seldom recorded at feeders in B.C.

The concluding chapter on backyard first-aid is very helpful, as is the resource list of agencies and recommended reading.

All in all, I feel that Bill Merilees did a commendable job of pulling so many ideas together. Until something of comparable quality is produced in Alberta, I would recommend this book to anyone interested in sharing their backyard with the birds and the bees, or, rather the birds and the butterflies.

Myrna d. Pearman,



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- (a) To encourage among all Albertans, by all means possible, an increase in their knowledge of natural history and understanding of ecological processes;
- (b) To promote an increase in the exchange of information and views between natural history clubs and societies in Alberta;
- (c) To foster and assist in the formation of additional natural history clubs and societies in Alberta;
- (d) To promote the establishment of natural areas and nature reserves, to conserve and protect species, communities or other features of interest;
- (e) To organize, or coordinate, symposia, conferences, field meetings, nature camps, research, and other activities whether of a similar or dissimilar nature;
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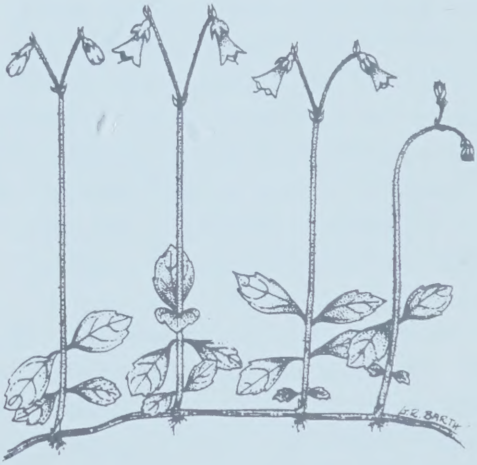

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DEADLINES for F.A.N. project reports are:

Alberta Christmas Bird Counts, January 30, Andrew Slater, 152 Oakside Circle S.W., Calgary, AB T2V 4H2

May Species Count—Plants, July 15, J. Derek Johnson, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB T6H 3S5; —*Birds and Mammals*, July 15, Don Stiles, 20 Lake Wapta Rise S.E., Calgary, AB T2J 2M9

Compiler cooperation is greatly appreciated.

PRESIDENT'S PAGE

Rob Gardner

As my term as President draws to a close, I finally can find enough time to reflect on the events of the past two years. It has been a time of important changes.

In 1987, environmentalists were still considered kooks who would all prefer to be living in log cabins. Now, it has become fashionable to be at least a nominal environmentalist. Some politicians and other decision-makers value our knowledge, and may even follow our advice.

This rapid change can be hard to appreciate. Suddenly, we are winning battles. To be sure, long standing issues such as the Oldman Dam continue to sap our resources. But my impression is that new problems, as they arise, are frequently decided with the environment in mind. We must change our mind-set from "victim" to that of "defender of the right". We must capitalize on the momentum of positive public opinion.

However, the war is not over by any means. As resources, including wildlife and wilderness, become rarer, the demands for their use increase. We must remain vigilant, but our list of allies grows weekly.

As president, I receive mail from all types of groups. I am constantly amazed at the variety of organizations which all strive to protect our wildlife. Ranging from a world coalition of peace, environment, and development groups, to local Fish & Game clubs, all see the need to care for our environment.

I have tried to emphasize the points we have in common with these groups, while firmly stating what we stand for. The Federation has joined with the Fish & Game Association, Alberta Wilderness Association and other groups. Although, from time to time, we have pointed out our differences, I still want to stress our similarities.

The environmental movement remains fragmented, with no leader and only poorly defined direction. I hope that the Alberta Conservation Strategy will give the guidance to unify all the dedicated individuals in this province. Together, we can lead the decision-makers toward a healthy environment.

Honourable LeRoy Fjordbotten receiving Cash Calendar number One from Pat Clayton and Jack Clements.

Flowing To The Future Conference

Barbara Levesque

The 1989 F.A.N. poster contest challenged Alberta's elementary school students to examine "the value and complexity of our rivers", then create a poster and write on the theme: "A river is more than water." More than 600 students from 31 elementary schools accepted the challenge, overwhelming the judges not just with numbers of entries, but with their depth of knowledge and feeling for our provinces' rivers.

The contest was held in conjunction with the "Flowing to the Future" conference held at the University of Calgary last May. Kevin Van Tighem, an organizer of the conference and, at that time, a F.A.N. director, came up with the idea that the contest should complement the proceedings - provide a focus for discussion during breaks and provide substance for reflection for the many delegates from government, industry and environmental groups.

As is often the case with children's art and writing, many of the posters were disarmingly direct and poignant. Christy Sandberg, a grade 3 student from Delburne School, drew a picture of a deer beside a forest drinking from a river and wrote, "Let the rivers be free. Keep the land safe." Jeffrey Symbaluk, a grade 4 student from St. Paul Elementary wrote, "A river is more than a glass of water. In rivers there's life and movement. A river is a great place to be." Many students, including Grand Prize winner Becky Hofer, looked at the past, present and future uses of our rivers and questioned the wisdom of those who would "use them all up" in their lifetime. Whether students came from urban or rural areas or from north, central or south Alberta, a common message in every batch of entries was "Be careful with our rivers."

One delegate at the "Flowing to the Future" conference liked the posters so much that he went back to his organization and suggested they be used to illustrate a publication. Don Gibson and his staff from the Canadian Heritage Rivers System selected a number of posters and paragraphs to use throughout their 1988-89 Annual Report. A pastel sketch of a mountain river scene by Ruth Parlane of Prairie Elementary School in Three Hills was chosen for the cover illustration. Since then, the Canadian Recreational Canoeing Association has also chosen some of the posters to use as illustrations in their Annual Report and other publications.

Feedback from participating schools was all positive and the teachers of both grand prize winners commented on how much their students enjoyed participating.

As mentioned in the Summer issue of Alberta Naturalist, Becky Hofer, a grade 7 student from Star Ridge School in Botha, was the First Grand Prize winner and Lori Tews, a Grade 6 student from Parkdale School in Wetaskiwin, was the Second Grand Prize winner.

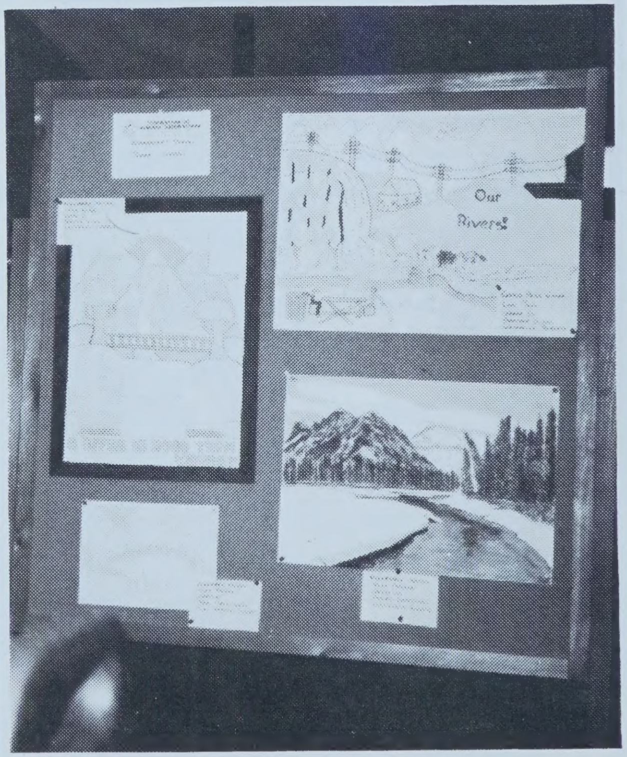
Honourable Mention prize winners were: Keri Kelly of Jessie Duncan Elementary School in Penhold, Shari Plachnet and Kari Bremer of Morrin School in Morrin, Tasha Schmaltz of Beiseker Community School in Beiseker, Leslie Frederick of Fox Creek School in Fox Creek, Christy Sandberg of Delburne School in Delburne, Jolene Boschee and Melissa Prater of Heritage Christian School in Calgary, Natasha Boehk of H.E. Bourgoin School in Bonnyville, Sarah Beth Leavitt of Percy Pegler Elementary School in Okotoks, Michelle Leung, Julia Macdonald, Amanda Babichuk and Katy Pedden of Campbelltown School in Sherwood Park, Ruth Parlane, Pamela Hoelzley and Jodi Pederson of Prairie Elementary School in Three Hills, Tany Klimp and Ray Shui of Elmer Gish School in St. Albert, Marylou Pruski of St. Boniface School in Edmonton, Kendra Hare, Jodi Tamboline, Layle Ruiter and Chris Hoyle of Parkdale School in Wetaskiwin, Angela Rotrick and Kristen Lewis of Griffith-Scott School in Millet, Kimberly Szalynski and Dee Bolokoski of St. Basil's School in Lethbridge, Neil Carlberg of Ecole Avondale School in Grande Prairie, Shane Lanz and Karleen Schenkey of St. Mary's School in Medicine Hat, David Brosha of Fort Public School in Fort Vermilion, Cheryl Lettner, Scott Meyers, Marcy Crandle and Tony Dart of St. Thomas More School in Fairview, Nicholas Weidl, Mathew Christie, Jeffrey Symbyluk and David Boulianne of St. Paul Elementary in St. Paul, Josh Laverick of Bezanson School in Bezanson, Lindsey Bolton of Seba Beach School in Seba Beach and Loree Somelick of Duggan School in Edmonton.

The Rainbow Lake School won the School prize of two VHS movies - Paddle to the Sea by Bill Mason and Nahanni River from Nahanni River Adventures.

Special thanks to our three judges: Hugh Philips from SEEDS (Society, Environment and Energy Development Studies Foundation), Janice MacLean-Hayden from CPAWS (Canadian Parks and Wilderness Society) and Tom Webb a F.A.N. member.

Grand prizes were donated by Wendy and Bill Judd of Diamond Hitch Outfitters, Roger McAdam of Beavermines Store, Vic Bergman and Bev Everts and by Maligne Lake Tours and the Sawridge Hotel in Jasper.

Honourable Mention prizes were donated by the Canadian Nature Federation, Joy and Cam Finlay, Hurtig Publishing, Canadian Wildlife Federation, Owl Magazine, The Sports Experts, Kevin Van Tighem, Barbara and Philip Levesque and the Federation of Alberta Naturalists.



Poster Display at the Conference.

(Photo: Pat Clayton)

Naturalists give lady slippers new, safe home

Chris Donaldson

Naturalists saved about 1,000 damsels in distress Saturday that were threatened with being crushed in the path of a road expansion.

About 30 people with shovels in hand combed a stretch of roadside ditch south of Bowden, digging up and transplanting the delicate lady slipper, one of Alberta's native orchids.

It was the second phase of a rescue operation by Red Deer River Naturalists to save about 5,000 wild orchids by transplanting them. Last year, the group saved about 1,000 of them.

The odd, perky yellow bloom poked through, but it was mainly buds that showed in the clumps of earth they carted across the highway to ground near the railway tracks where they were transplanted.

With road construction expected to get under way by fall, the group wanted to get an early start this year and most of the plants weren't in bloom.

A member of the Red Deer River Naturalists, Mike McNaughton, said it was coincidental that the operation fell in conjunction with Environment Week.

"They start construction this fall and we thought we would get it started as early as possible this year."

Mr. McNaughton said the project generated a lot of interest from people who wanted to help by transplanting them in their gardens.

But gardeners wouldn't be doing the orchids any favors because the "finicky" plants rarely survive in the black loam of gardens, he said.

"They are finicky. They grow in any kind of environment, but just can't be dug up and transplanted that easily. They go into what we call transplant shock."

Nature groups like the Red Deer River Naturalists and the Alberta Native Plants Council are pushing for provincial legislation to protect plants from threats like chemical sprays and from people digging them up, he said.

In the meantime, the group tries to educate the public about taking them from their natural habitat, to prevent them from becoming an endangered species, said Mr. McNaughton.

People are starting to become more aware that certain species of wild plants are diminishing, said Nan McKernan of Treefriends in Olds.

Transplanting Lady slippers to a safe location.

Remember to register for ENDANGERED SPACES WORKSHOP January 27th, 1990.

Treefriends, along with the Torrington Junior Foresters and people from the Calgary Zoo helped with the transplanting.

She said her group received many calls from local people who were concerned about the orchids when they heard about the rescue operation.

Donna Balzer, a horticulturist with Calgary Zoo said the zoo has established a seed exchange program which includes seeds from wild flowers to discourage people from digging them up in the wild.

The people from the zoo took about 200 orchids to transplant in habitat displays.

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Third Edition - August 1989

from the Alberta Environmental Network

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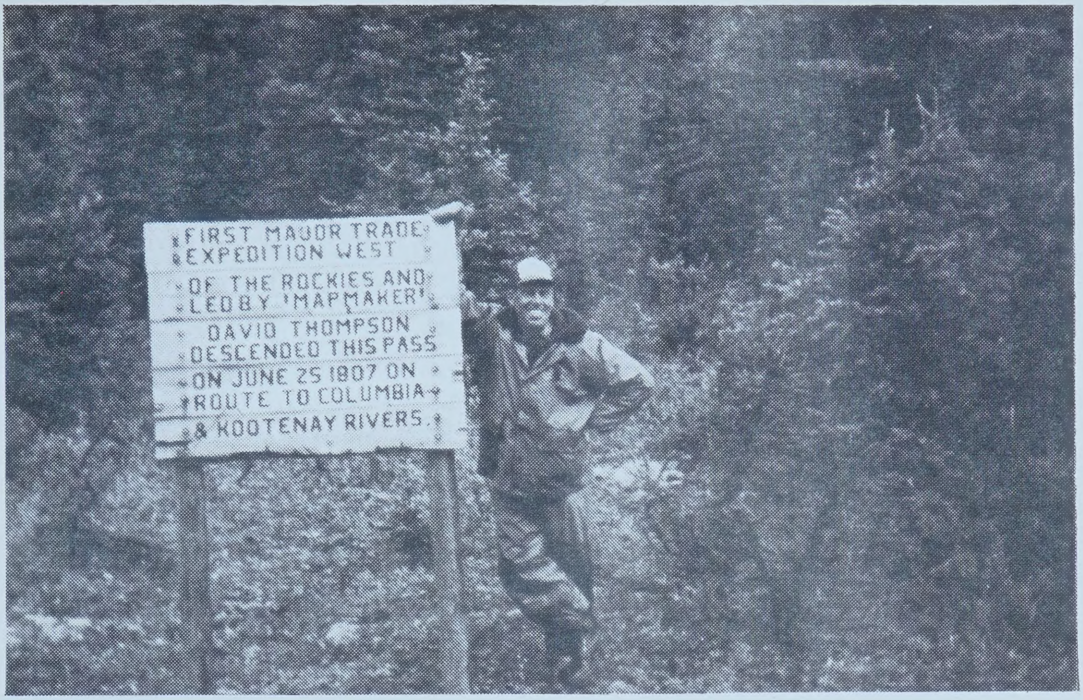
ON HORSEBACK THROUGH THE HOWSE PASS

Dorothy Dickson

Red Deer River Naturalists most ambitious outing this summer was a trip through the Howse Valley in Banff National Park and over the Howse Pass into the Blaeberry Valley in B.C.. As the rivers were high and there was a lot of deadfall across the trail, it proved to be a rigorous adventure which was not made any easier by the weather - it rained on five of the six days and the fresh snowline got uncomfortably close! The twelve riders ranged in age from 9 to 66 years and, although for some it was their first wilderness camping trip, everyone happily did their share of camp chores, of caring for the 20 horses and of entertaining their companions with songs and stories when we had to stay in camp during 36 hours of pouring rain while in B.C.

We found that Park regulations allow no more than ten people on a group permit, so we travelled on two permits. We had no hikers, which, as it turned out, was fortunate. They could not have gone where the horses went through rivers and bogs, although the deadfall would probably have been easier to negotiate on foot than with a string of horses. We also learned that we were allowed to rent horses, but not employ an outfitter, from outside the Park so we took our own tents and food but were glad to have Irvin Palmer of Sylvan Lake, from whom we rented the horses, along as one of the party. We were very grateful to Adeline Nesbitt for buying the food and pre-cooking much of it for us and to Don Waselenko of Rimbey for so ably taking charge of the "kitchen" en route. Park backcountry rules also stipulate spending no more than three nights in any one campsite. As the only



Irvin Palmer at the top of Howse Pass. *(Photo: Mary McKinnon)*

place to camp with horses in the Howse Valley is 19 km in from the highway, we extended the trip to six days. This allowed us to spend two nights in the Howse Valley, two in B.C. and the last night back in the Park ready for the ride out.

In The Footsteps of David Thompson

For most of us, this was our first trip into the beautiful Howse Valley and all agreed it was well worth the effort. Perhaps because of the rough conditions we encountered, our thoughts often turned to David Thompson and the other adventurers who had travelled the route before us. We felt a real closeness to history, a feeling that could never be achieved just from reading a book or even looking at the commemorative plaques erected at the summit of the Pass. It was the feeling of sharing the explorers' experience, not just following their route, that gave us such pleasure.

We also found the trip interesting from a natural history point of view. We started from the Saskatchewan River bridge on the Banff-Jasper Highway and crossed the rather intimidating Mistaya River without accident, although some of us got rather wet. We then rode through the montane area formed by the junctions of the Mistaya, Howse and North Saskatchewan Rivers. There we found rolling, rather sparsely vegetated areas, interspersed with fairly open woodland and a few sloughs. We saw evidence of use by elk and sheep and there were some ducks on the ponds, probably having nested there. On the wet river flats there were several patches of Marsh Felwort *(Lomatagonium rotatum)*, a gentian which is quite rare in Alberta (this is only the sixth find in the Province according to *Flora of Alberta, Moss & Packer, 1938)*.

The old growth forest through which the trail then ran is not too dense, partly because of all the deadfall, so it is able to support quite a good understory for cover and nesting sites. While neither riding a horse in a group nor wet weather is conducive to good bird watching, we nevertheless saw or heard about 20 species in the valley including grouse, warblers, thrushes, Steller's Jay and a loon which serenaded us one morning. We had a wonderfully close look a Golden-crowned Kinglets and our campsite "regular" was a Rufous Hummingbird.

Further up the valley, the montane meadows are home to goats (although none were seen on this trip) and there are known to be at least two mineral licks in the area. On sandy patches near the river, we found tracks of moose, elk and coyote. We were disappointed not to see or hear any wolves, but hikers going in shortly after had wolves howling close to their camp and also saw recent bear sign.

The bears were doubtless moving in to feast on the rich berry crop. The berries on both sides of the Pass were astonishing - strawberry, raspberry, currant, gooseberry, cranberry, blueberry, huckleberry, buffaloberry and both alpine and common bearberry. Seeing all those "goodies" just out of reach from horseback is very frustrating and several riders tried their hand at berry grabbing acrobatics, with but little success!

The berries are not the only things which make this good bear country. When the deadfall is covered by a blanket of snow (and this is a high snowfall area), it provides snug denning sites. There are also caves on several mountainsides and one of the party had previously found evidence of their use by wintering grizzlies. The area is also prone to avalanches which clear the slopes of snow and trees, providing good feeding places for the bears when they first emerge in the spring. With very few people using the valley except in mid-summer, the bears here are well away from human interference and uncomfortable, or even dangerous, bear-human encounters are avoided.

The valley supports a wide variety of montane zone plants which continue right up into the Pass. On the only warm day we had, we went for a short walk to Lagoon Lake while our clothes,etc., were drying in the sun.

Without leaving the trail, we counted nearly 40 species of flowering plants in about 2 km. We had the thrill of finding a lousewort none of us had seen before. Later, we identified it as *Pedicularis racemosa* which (again according to the *Flora of Alberta)* has only been found in three other places in the Province.

There was a marsh at the far end of this beautiful little lake which looked as though it would provide good waterfowl habitat and here were Goldeneye and a loon on the lake itself. In the large bog between our camp and the lake, we saw several frogs and the stream draining it contained lots of tadpoles.

This area is where the warden's cabin used to be, but because of frequent flooding a new cabin was built further upstream. However, the river has since changed course, and camping is possible on the strip of dry ground between it and the bog. There was considerable fluctuation in the depth of the river and, as glacial melt increased during the day, we watched a little anxiously as it rose about 20 cm. However, as the weather got colder after our first two days, the melt lessened and by the time we left the water was down about 45 cm. The rain we had in Alberta came in fairly short, heavy storms (unlike the steady downpour on the B.C. side) and appeared to have little effect on the river but increased the depth of water in the clayey bogs so that it was up to the horses'fetlocks.

Crossing the Howse River.

Fast, deep water - The Mistaya River challenged both novices and experienced riders. *(Photos: Don Waselenko)*

A View From the B.C. Side

Just on the B.C. side of the Pass, there are attractive grassy meadows with sloughs on which there were flocks of about 50 Northern Phalaropes. These shorebirds are not listed as passing through the Rockies and are generally considered coastal birds, but presumably they were migrating from their breeding grounds somewhere in the Arctic to winter off the west coast. As this Pass is one of the lowest in the Rockies (1527 m), it is probably also used by other species migrating between Alberta and B.C. or the western U.S.

We knew little of what to expect once we had crossed the divide into B.C. and the Blaeberry watershed. After the gentle slopes (.4%, ie. 100 m in 26 km) of the Alberta side, we were surprised by the steepness of the terrain even though we knew that the grade of the 60 km down to the Trans-Canada is virtually the same as that of the Rogers and Kicking Horse Passes (1.25%, ie. 750 m in 60 km). The Blaeberry River rushes down a rather narrow, high-walled, heavily forested valley and is joined by several strong side streams. One we crossed had quite a high waterfall just before it joined the river. Without our sure-footed, unflappable horses, R.D.R.N. might had been a few members short after that one!

We had some difficulty finding a place where it was possible to camp, but eventually found a clearing 7 or 8 km from the summit, having negotiated a trail fraught with rocks, roots, holes, bogs and slippery hills. There we had to stay because of the bad weather. We had hoped to continue on down the 7 km or so to what appears on the map to be a more open area at the junction with the creek from the Mummery Glacier. This is at the end of the logging roads which stretch into the Blaeberry Valley from the Trans-Canada near Golden (i.e. where the Chamber of Commerce group went). Beacause of bends in the river and the high walls of the valley we found it was not even possible to see down there. We were later told it was just as well we had not gone further as a mud slide had brought down so many trees it would have been difficult to take horses through, although hikers were able to scramble across. Another of the side streams was also reported as running very high.

Because of the steep walls of this valley, it must form the major wildlife corridor for any animals passing between the Howse Valley in Banff Park and the wider valley lower down the Blaeberry. The thick rain forest would certainly provide good cover, while the rough, steep trail and stream crossings should help to prevent the poaching problems that occur in more accessible areas of the Park.

We returned to Alberta for the last of our three permitted nights in Banff Park before riding the rest of the 26 km from the Pass back to the Saskatchewan River Crossing. This time we avoided the worst of the deadfall and bogs by travelling on the river gravel for part of the way and this cut our riding time to 5 hours compared to the 7 it had taken us to ride in on our first day. It also enabled us to be out of the thick trees and enjoy the views to the north and west of the Howse Valley.

It is a pity that people would even consider desecrating this valley, depriving wildlife of a haven and our grandchildren of ever being able to enjoy the experience of stepping back into the past as we did.

The riders were tired and still damp when we got back but, after six days of quietness and natural beauty, we all felt like turning round and heading back into the wilderness when we heard the roar of the traffic rushing along the Banff-Jasper highway!

The riders were: Bill Nesbitt, Don, Jason (11) and Nathan (9) Waselenko (Rimbey), Irvin Palmer (Sylvan Lake), May McKinnon (Penhold), Eve and Richard White, Morris and David (14) Flewwelling (Red Deer), Linda Thirsk (Olds) and Dorothy Dickson (Innisfail).

STATUS OF MIGRATORY BIRDS IN CANADA

Prepared by Environment Canada

This summary outlines the 1989 spring breeding population surveys and the 1988 harvest results for geese and ducks in Canada.

GEESE

For the past several years, most goose populations in Canada have been stable or increasing. Results from mid-winter inventories and breeding ground surveys in 1989 indicate that this trend is continuing.

No changes in goose hunting regulations are planned for 1989, with two exceptions. The daily bag limit for Greater Snow Geese will be increased by one bird in Quebec. The special late Canada Goose season in Ontario Wildlife Management Unit four has been cancelled for 1989, pending the outcome of a banding study examining winter distribution.

DUCKS IN WESTERN CANADA

Results from the May 1989 surveys confirmed that waterfowl breeding populations continue to decline and that habitat conditions deteriorated from 1988. Restrictive hunting regulations for mallards, pintails and canvasbacks will again be implemented in Manitoba, Saskatchewan and Alberta for the 1989 hunting season.

Population estimates for mallards, blue-winged teal, pintails, and canvasbacks are of particular concern because of their long-term declining trends. The number of mallards and blue-winged teals in 1989 declined from the previous year in Manitoba and Alberta, but increased in Saskatchewan. The results for the three provinces combined showed an overall decrease. Canvasback also declined overall, but increased in Alberta. In contrast, the number of pintails increased only slightly from 1988 in Saskatchewan, Alberta and in the provinces combined. These continuing declines in populations of prairie ducks led to the restrictive regulations to be implemented in the 1989 hunting season.

Manitoba has delayed the opening of the hunting season by one week, a measure that will protect local breeding birds of all species. In addition, the daily bag for mallards will start at two, and increase later to four (rather than six). The daily bag limit of three mallards in Saskatchewan will be maintained, and there will be an additional limit of one canvasvack and one pintail. In Alberta, the regulations will remain the same as in 1988 with a daily limit of one canvasback and one pintail.

In the interior grasslands of British Columbia, survey results showed:

the number of ponds increased over the previous year but were in poor condition, with little vegetation and suspected poor invertebrate production;. in spite of the increase in pond numbers, the total number of ducks appeared to have declined.

British Columbia has incorporated a one canvasback limit in the daily bag limit for 1989, and will review population status and current hunting regulations prior to the 1990 hunting season.

One very significant result of the 1988 hunting season was the age ratio of ducks in the harvest. Mallard age ratios in 1988 were the lowest recorded in the history of the Canadian Wildlife Service harvest survey.

DUCKS IN EASTERN CANADA

Counts on wintering grounds have shown that black ducks have gradually declined over the past 30 years but the decline seems to have levelled off. In the Atlantic provinces, Quebec and Ontario breeding ground surveys are undertaken to estimate numbers of breeding black ducks. In 1989, a decline was evident in Prince Edward Island, whereas black duck populations in other surveyed areas appeared to be stable.

In 1984, Canada agreed to co-operate with the U.S. to reduce the black duck harvest through a five-year period of restrictive hunting regulations. However, harvest data since 1984 indicated that hunting regulations alone have not been effective in decreasing the black duck harvest. The trend toward increased permit sales in many parts of eastern Canada suggest that black duck harvest may increase in the future. To reduce the harvest, hunting restrictions will apply for 1989.

In Prince Edward Island, the opening of the special black duck season was delayed by 14 days. In Quebec, black ducks have been offered additional protection by cancelling the two-bird increase in bag limit that has been taking place later in the season. This was accompanied by a similar restriction in overall duck bag. In addition, the opening date in one zone was delayed so that it opens on the same day as the adjacent zone in Ontario, where restrictive regulations remain in effect.

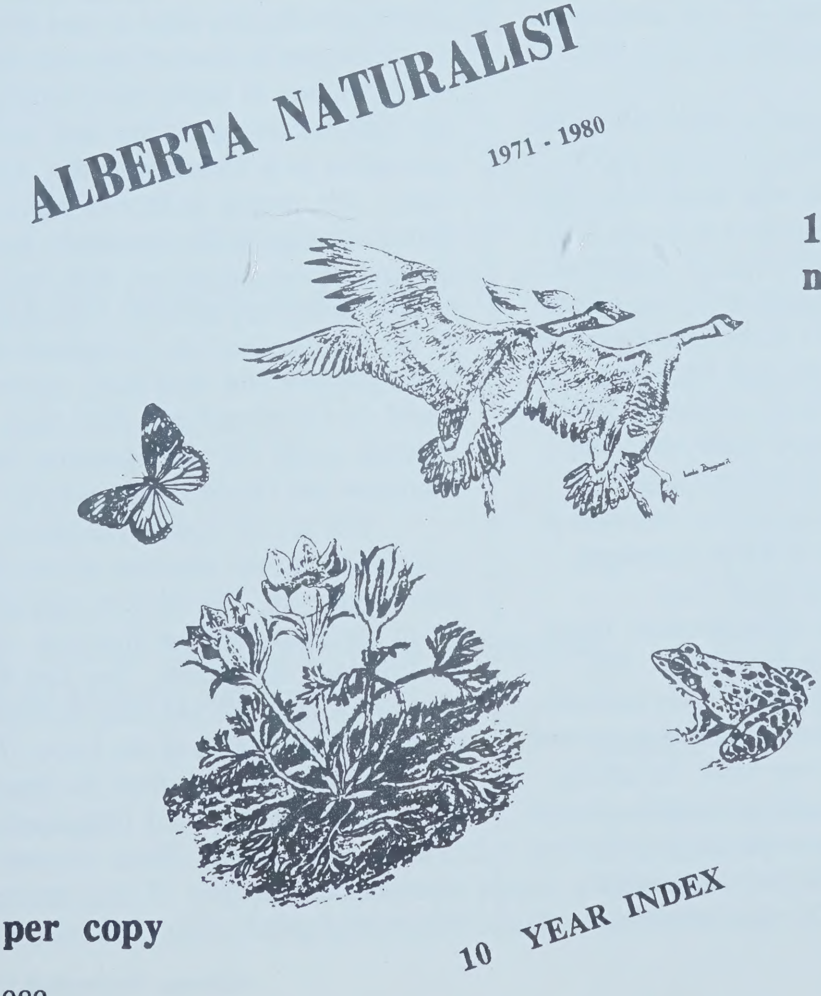
In most zones of the Atlantic provinces, the opening dates for the duck hunting season will be delayed to some extent to provide protection for local breeding populations of all species.

The bonus scaup season has been eliminated in Ontario for 1989. There is evidence that scaup populations have been affected by the drought in western Canada.

FIVE YEAR SUMMARY

A five year banding summary (from 1984 - 1988 inclusive) has been compiled by Petra Stubbs for the BBO. This includes analysis of birds/net hour, bird recaptures and some summaries of measurements and migration timing. Partial funding was provided through a R.P.W. grant. Copies will be distributed to various Ornithological journals with thoughts of printing some or all of this information. If you would like a copy, please direct your inquiries to the BBO at P.O. Box 4201, Edmonton, Alberta T6E 4T2. (There will be a nominal fee involved for printing and mailing costs).

Northern Pintail
(Photo: Jim R. Salt)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The Mooneye In Alberta

Wayne Roberts

There are only two living species of mooneye (Hiodontidae), a family of freshwater fishes unique to North America (Cavender 1966). The Mooneye *(Hiodon tergisus)* and Goldeye *(H. alosoides)* both occur in Alberta where they are common to abundant residents of the plains' portions of the larger rivers that form the Saskatchewan River drainage system (Figure l). The Goldeye also occurs in the mid- to lower reaches of the Peace and Athabasca drainages (Kennedy and Sprules 1967). A questionable record provided by Bajkov (1926) "near" Jasper is outside of the currently occupied range of this species and is not supported by specimens; it is thus excluded.

The Mooneye was apparently rare in Alberta before the 1970s. The first specimen record for Alberta was taken from the confluence of the Sturgeon and North Saskatchewan rivers in 1968 but not identified as a Mooneye until examined by the author in 1982. During 1973 a number of specimens were collected from the Red Deer and North Saskatchewan rivers (Roberts 1974). This species has become more abundant since that time and is regularly caught by anglers during the summer. The increase in numbers of Mooneye in these drainages followed impoundment of the Saskatchewan and South Saskatchewan rivers in Saskatchewan during the 1950s. The reservoirs or quiet reaches of river immediately upstream may have provided improved rearing and overwintering areas for young Mooneye, favouring rapid population growth from smaller, pre-impoundment populations.

Life history data were obtained by examination of over 700 specimens taken by angling from the North Saskatchewan, Red Deer and Medicine rivers during April-October of 1973-1989. This included direct observation of behavior and microhabitat use by the Mooneye. Color descriptions were made from live specimens. A series of specimens was retained for the University of Alberta Museum of Zoology (UAMZ) collection. The morphology of the anterior anal fin rays of dissected individuals was examined to establish criteria for determining the sex of specimens caught and released. Qualitative notes were made regarding condition of gonads and contents of stomachs.

Mooneye are frequently confused with Goldeye as both species are laterally compressed, deep-bodied fish with large eyes and a long anal fin (Figure 2). There is a keel or knife-like edge to part of the ventral region in front of the anal fin. The dorsal surface is dusky olive-brown or greenish becoming lighter and somewhat irridescent as it blends with the silvery sides. The ventral surface is white. The dorsal and caudal fins are dusky grey while the rays of the paired and anal fins are white or only lightly pigmented. The hind margin of the first pectoral ray is outlined by dense black pigment and faint black pigment is found on the second and third rays. Characteristics useful for distinguishing between Mooneye and Goldeye are given in Table 1.

The sex of mature Mooneye may be determined by the structure of the anal fin rays (Figure 3). The longest rays of the anal fin of the female are the first four. All of the anal fin rays are slender. The first half of the anal fin of the male has long rays followed by much shorter rays at the back. The anterior rays are thick near the base with coarse segmentation and little space between adjacent rays. Thick anterior anal rays are characteristic of male hiodontid fishes (Cavender 1966); however, this is

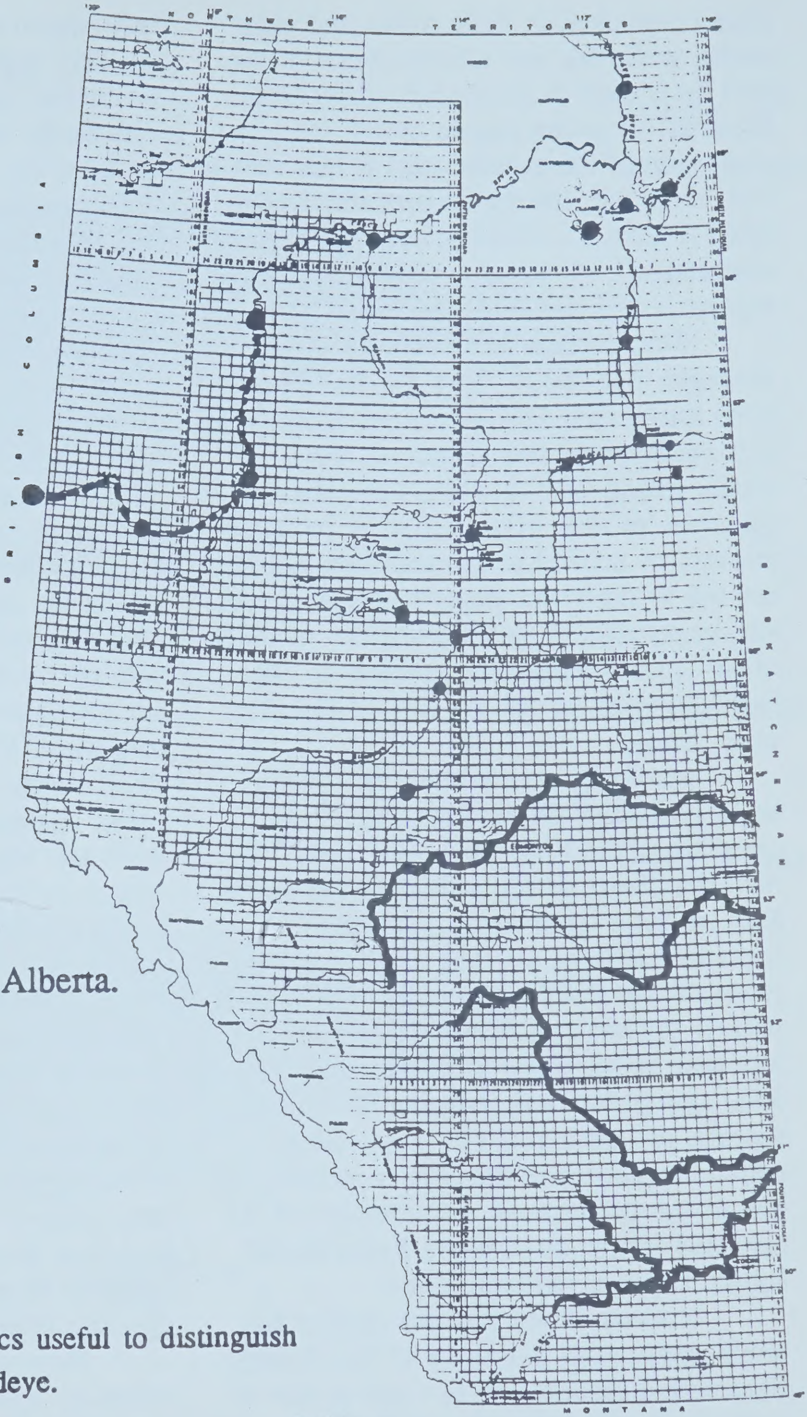

NORTHWEST TERRITORIES
BRITISH COLUMBIA
SASKATCHEWAN
MONTANA
EDMONTON

Figure 1. Distribution of Mooneye and Goldeye in Alberta.

Table 1. External characteristics useful to distinguish between the Mooneye and Goldeye.

	Mooneye	Goldeye
Dorsal rays	11-12	9-10
Dorsal fin origin	in front of anal fin	behind front of anal fin
Ventral keel	from anus to pelvic fins	from anus to pectoral fins
Eye diameter	greater than maxilla length	shorter than maxilla
iris color	silvery below- gold above	gold or amber

often overlooked in field guides and other books, while the less reliable shape of the anal fin is used to distinguish males from females. In young mature males, the elongation of the anterior rays is less evident than in old fish and the fin is not obviously lobed (Figure 4). Thick anterior rays are characteristic of mature male *Hiodon* spp. whether a lobe is formed or not.

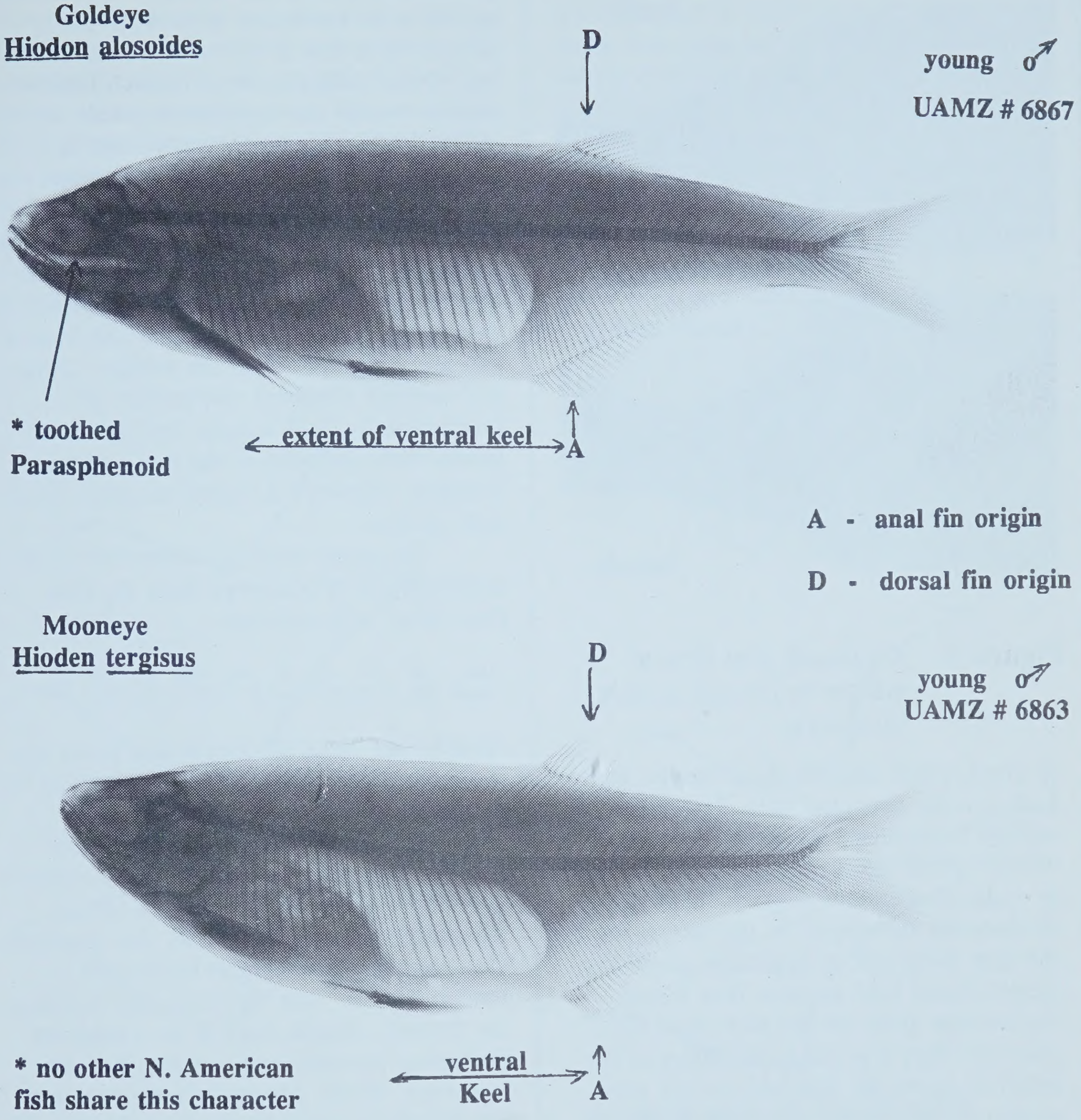
Ripe prespawning male and female Mooneye were taken from the Red Deer River during late April and May. Males with stiff swollen anal fins (Figure 4) were caught during June at which time small quantities of milt were exuded in response to pressure applied to the abdomen just anterior to the vent. Females caught during late June and early July were spent. In 1989 spent females were taken on June 1. No fertilized eggs, larvae or young-of-the-year were found.

Spawning occurs from the upper badlands portion of the Red Deer River upstream to the Little Red Deer and Medicine rivers during a short period in late May or June when water temperatures exceed 12 degrees C. The number of eggs produced has not been determined for Alberta populations, but similar-sized Mooneye in Manitoba produced about 5000-9000 eggs (Glenn and Williams 1976). The absence of larvae and young age-classes within this portion of the river is probably due to the downstream displacement of the eggs and larvae, as similarly hypothesized for the Goldeye (Roberts 1975).

It seems likely that this species has semibuoyant eggs like those of the Goldeye. Eggs with a specific gravity close to that of water are probably an adaptation to silty conditions such as encountered in plains rivers during periods of peak flows caused by rain and mountain snowmelt in June and July. This type of egg, easily displaced by the current and suspended in midwater, is less subject to scouring and suffocation by silt than eggs lying on the bottom and may be carried far downstream prior to hatching. The newly hatched larvae are much like the larvae of the Goldeye in that the head is deflected downward around the front of the yolk sac, in which a large oil globule is contained (Snyder and Douglas 1978). Battle and Sprules (1945) noted that newly hatched Goldeye larvae float "head up " at the surface; such is probably the case with Mooneye hatchlings as well, resulting in their further downstream displacement.

Young Mooneye apparently spend their early years in downstream portions of the large plains rivers in Alberta and Saskatchewan and do not migrate upstream until they are sexually mature or nearly so at ages of 3 years or greater. Adult Mooneye are not year-round residents of the upstream portions of the range indicated in Figure 1. These adults enter the upper badlands and points upstream in the Red Deer River in April and May and are present until late August or September. In the North Saskatchewan River at Edmonton they are present from April to October. Exactly where Mooneye overwinter in Alberta is not known; however, it is not likely far downstream as they are present in their "summer" waters shortly after the ice breaks up in the spring. Goldeye, which are more abundant and more conspicuous, show the same pattern of seasonal occupancy of the Red Deer River and few if any overwinter upstream from the upper badlands portion of the river (Kraft 1979, personal observations).

Flow levels within these rivers may influence upstream and downstream movement of both Mooneye and Goldeye. During years of unusually high spring and summer water levels (1969, 1974, 1981, 1982, 1986, 1989) it was noted that large numbers entered tributaries such as the Medicine and Little Red Deer rivers early in the year and


Goldeye
Hiodon alosoides
D
young ♂
UAMZ # 6867
* toothed
Parasphenoid
extent of ventral keel
A
A - anal fin origin
D - dorsal fin origin
Mooneye
Hioden tergisus
D
young ♂
UAMZ # 6863
* no other N. American
fish share this character
ventral
Keel
A

Radiograghs by W. Roberts

Contact prints by R. Mandryk

Figure 2. X-rays of a Mooneye and a Goldeye illustrating features useful for distinguishing these similar fish.

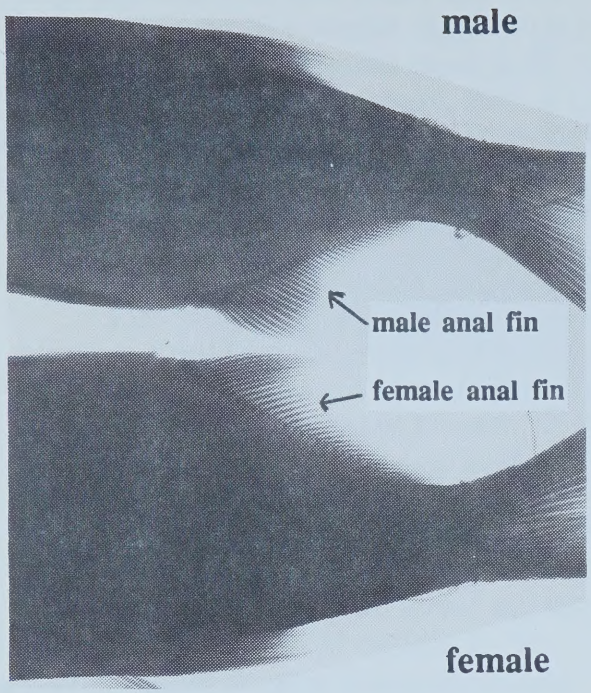


Figure 3. X-rays of anal fins of mature male and female Mooneye.

in years where summer flows stayed high both species remained until September, moving downstream as water levels declined. While decreasing daylength as well as water temperature might be cues for downstream movement in the late summer, the flow levels are an important modifying factor. Since 1983 summer flow levels downstream from the Dickson Dam have generally been low due to the filling of the reservoir above the dam and usually only small numbers of Mooneye and Goldeye have been found upstream of the city of Red Deer. In years with very low flows, such as 1984 and 1985, these species were absent or uncommon upstream of Red Deer. These species are exceedingly abundant in the badlands downstream of Red Deer.

Mooneye were observed feeding at the surface during dawn, at dusk and occasionally during full daylight. Mooneye appear to be associated in small, loose schools of as few as two or three individuals. Deep, quiet reaches of water in midstream or near the fastwater interface of eddies harbored most Mooneye during daylight. In the evening some Mooneye moved upstream to the tails of riffles or to the edge of the river. Mooneye were caught by angling during all daylight hours as well as after dark. During midday, specimens were taken from midwater, near the bottom and less frequently from the surface. Stomach contents consisted exclusively of invertebrates. Both aquatic and terrestrial insects were included in the diet and most stomachs contained a variety of orders from both groups.

The mean length in millimetres at increasing ages of Mooneye from the Red Deer River is as follows:

Ages	III	IV	V	VI	VII	VIII	IX	X	XI
Length	222.2	240.8	253.2	269.5	277.6	285.5	293.6	295.3	310

Goldeye are about 1/3 longer at a given age in the Red Deer River and may weigh up to over 1500 g. However, the 2.4 kg fish recognized as the Alberta angling record Goldeye was actually a Quillback *Carpiodes cyprinus;* the author examined an official photograph that clearly shows the diagnostic Quillback fins. The largest individuals in each cohort for both Mooneye and Goldeye are females, though there is no significant difference between sexes in length at the same age. While Alberta is home to very large Goldeye, the Mooneye are much smaller. The longest Mooneye sampled from Alberta was 312.5 mm fork length. A shorter, more robust individual weighed 499 g. These female Mooneye were angled from the Red Deer River by the author. In Ohio, Mooneye reach a maximum weight of over 1 kg. The youngest fish were age class III (in their fourth summer) and the oldest were age XI. Both very young and very old Mooneye were rare. All specimens examined were sexually mature or maturing. Age classes III and IV were comprised mostly of males. Some male Mooneye mature at age III, but most mature at age IV. Females do not mature until ages IV or V. Glenn and Williams (1976) found that 23% (mostly males) of age III Mooneye in the Assiniboine River in Manitoba were mature and that 100% of both sexes were mature by age V.

During the early years of this study, the mean age of specimens sampled was 4.8 years with most specimens from age classes V and VI or less. During the mid- and late 1970s, however, the cohort produced in 1970 was exceedingly successful and accounted for up to 75% of the Mooneye sampled in a given year. The longevity of some members of this cohort resulted in unusually high numbers of old (VIII in 1978, IX in 1979, etc.) fish in the population. The

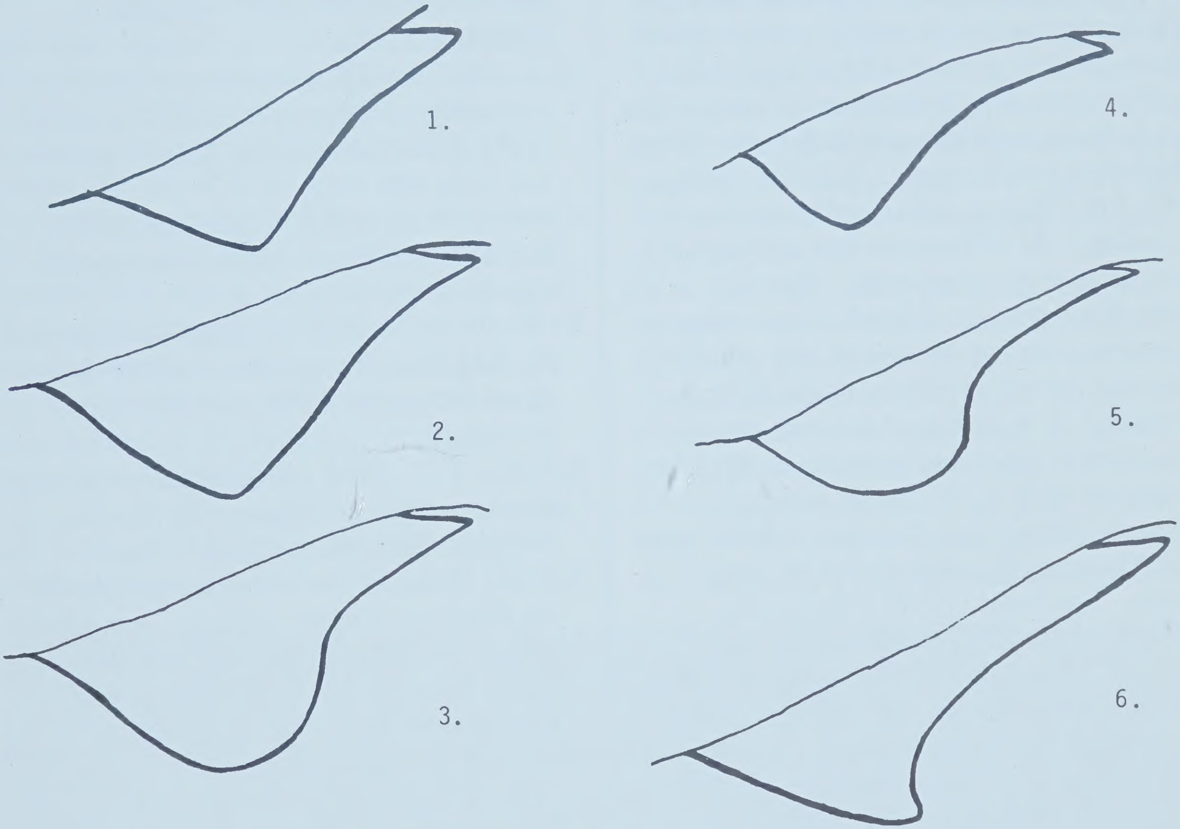


Figure 4. Characteristics of anal fins of mooneye species that separate immature and mature individuals.

Key

Goldeye

1. **immature female/male**
2. **maturing male (young adult)**
3. **mature male**

Mooneye

4. **young adult male**
5. **adult male**
6. **adult female**

average age of the specimens sampled in 1979 was 7.9 years. Samples collected during 1981-1983 contained mostly young and middle-aged fish with age classes IV-VI accounting for 95% of all Mooneye sampled, with an average age of 4.8 years.

Both Mooneye and Goldeye possess adaptations to life in silty water. Semibuoyant eggs contribute to reproductive success under silty conditions. Large eyes, protected by transparent adipose eyelids enable the fish to see and feed under the low light levels encountered in turbid waters. While these species possess adaptations that permit successful persistence in waters that are at least seasonally turbid they are not restricted to turbid waters. It is frequently said that Goldeye prefer turbid waters; however, it is more correct to say they do well in such environments. Mooneye on the other hand are said to prefer clear water; however, they too do well in silty plains rivers in Alberta and have, in the 1970s, increased in numbers. Mooneye are abundant in the turbid Assiniboine River in Manitoba (R.R.G. Williams, personal communication) and Cavender (1966) notes that Mooneye are often found in turbid water. Trautman (1957) documented numerous deleterious changes to the waters of Ohio and noted that the decline in numbers of Mooneye was greatest in waters that had become turbid. It is important to recognize that an increase in turbidity is probably the most visible, but not the only change that occurred in Ohio. Unfortunately, his observation is frequently cited and it has become an established "fact" that Mooneye are intolerant to silt in spite of their success in turbid rivers in the prairies. Whether real differences exist in their respective tolerances to turbidity, both Mooneye and Goldeye thrive in the seasonally turbid waters of Alberta's plains rivers.

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Author's address:
Dept. Zoology,
University of Alberta, Edmonton, Alberta.

Otters Return To Jasper National Park

Dick Dekker

As far as is known, since Jasper National Park's (JNP) establishment in 1907, otters have been extremely scarce and thinly distributed, with collections and sightings centered in the lower Athabasca Valley (Soper 1970).

In 1967 and 1968, I found otter tracks and scats common at Talbot Lake and along its outlet to the Athabasca River. Talbot Lake has excellent otter habitat with extensive marshes and abundant fish populations. In July of 1967, there was an occupied otter den on the lake's bank. On 23 June and on 3 October, 1968, respectively, a single otter and an adult with two young of the year were sighted in the lake. An 8x10" colour photograph (taken by Jan de Haan) of the three otters, resting on a muskrat lodge, was donated to the Wardens' Office for deposition in JNP library files.

Two otters were killed by vehicles on the Yellowhead Highway at Talbot Lake in 1967 and 1969. Thereafter, Holroyd and Van Tighem (1983) considered the species "probably extirpated" in the lower Athabasca Valley of JNP.

On 14 March 1972, I found otter tracks along an arm of the Athabasca River at Snaring, but I failed to find further evidence of otters in the lower valley during frequent visits over the next 14 years.

Recent Otter Records

On 5 September 1986, fresh tracks were found in mud along a 100 m section of the Athabasca near the confluence with the Rocky River. Tracks and scats were again located in this vicinity in 1987, 1988 and 1989. During the summers of 1987 and 1988, otter tracks were also found along the Athabasca near Pocahontas, as well as along the Snake Indian River from its confluence with the Athabasca to Old Devona.

In 1987, there was much otter sign along Coronach Creek, which flows into the Athabasca just below the mouth of the Snake Indian River. The upper portion of Coronach Creek remains open all winter and harbours small Brook Trout. As indicated by numerous scats and surface wear on the banks near an old beaver lodge, an otter family probably lived in the lower

Two of three otters observed on Talbot Lake on 3 October 1968. *(Photo: Jan de Haan)* portion of Coronach Creek during the summer of 1987. The following winter, otters spent a lot of time in a beaver pond with lodge farther upstream, as evidenced by large piles of scat on the creek banks. On 14 February 1988, two fresh otter tracks led from this area to an arm of the Snake Indian River, about 0.7 km away. The area in between the two bodies of open water was forested and covered with ± 40 cm of snow.

During the winter of 1988-1989, Brook Trout appeared to be absent from Coronach Creek, and otter tracks were found only on the lower section which freezes over each winter.

On 21 March 1989, I found the first evidence that otters had returned to Talbot Lake. A fresh hop-and-slide trail ascended the lake's outlet and continued intermittently along the ditch that parallels the highway. Tracks and slide furrows were also located along the banks of the stream which connects spring water on the lower Rocky River to the Athabasca, just a few hundred metres east of the Talbot Lake outlet. It seemed evident that otters had crossed the highway at this location at the risk of being run over by traffic. To prevent such fatalities, and to discourage otters from crossing the highway, a low wire fence could be constructed along sections of the road adjacent to the lake's outlet, forcing the animals to travel through the culverts. At present, Talbot Lake's culvert is wired off to prevent beavers from plugging it. But the wire mesh is apparently wide enough to let otters through. However, when I proposed the building of an otter fence to JNP staff, the idea was considered unpractical; ungulates and geese might be hung up or hindered by such a fence.

Fortunately, the return of otters to JNP does not seem to be restricted to the lower Athabasca Valley. Warden Office files contain three recent (1988-1989) sightings from the mid Athabasca region between the Miette River and about 12 km upstream from Jasper town. In addition, trappers have reported otter sign along the Brazeau River on JNP's south boundary.

Note: On 23 June, 1989, a visiting biologist from the USA reported seeing three otters playing and running in and out of the water on the North shore of Jasper Lake. The larger of the three stood up on its hind legs. Ironically, the biologist at first reported these animals as Grizzly bears, but changed the identification on the basis of the tracks we found at the site! As any naturalist has learned by experience, size is an unreliable criterion for field identification. But to mistake an otter for a grizzly...? The biologist had viewed the animals from a distance of about 0.7 km without the aid of binoculars.

Acknowledgement

Since 1987, the author has been under contract to Parks Canada as a "volunteer wildlife researcher." Winter field trips were often made in the company of P. DeMulder or B. Genereux. The latter also reported otter sign independently. Warden Wes Bradford contributed information on otter sightings from JNP wildlife data files, and he reviewed an earlier version of this article.

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Author's Address

3819-112A Street, Edmonton, Alberta T6J 1K4

BAILLIE FUND GRANTS AVAILABLE FOR BIRD PROJECTS IN 1990

Do you have plans for an individual or club project on birds that needs some extra funding? The James L. Baillie Memorial Fund for Bird Research and Preservation may be able to help, and invites you to apply for a grant. Two types of grants are offered: (1) project grants for support of research, conservation or educational projects on Canadian birds, and (2) atlas travel grants for participants in high priority fieldwork for the Maritimes or Alberta Breeding Bird Atlases (open to both residents and non-residents).

"Deadlines for submission of applications are 15 January 1990 for projects and 1 March 1990 for atlas travel. For further information, write to the Secretary of the Fund or contact your club [President, Secretary, Newsletter Editor, etc. - insert name and telephone number of appropriate person], who has more details."

Application forms and instructions may be obtained from Martin K. McNicholl, Secretary, James L. Baillie Memorial Fund, Long Point Bird Observatory, P.O. Box 160, Port Rowan, Ontario, NOE 1MO (Tel: 519-586-3531). The James L. Bailie Memorial Fund is funded primarily by Long Point Bird Observatory and co-operating naturalists' clubs from proceeds of Canada's annual Baillie Birdathon. By taking part in the Birdathon, individuals and clubs can help support the Fund and clubs can keep a share of the proceeds for their own projects. Information on participation in the Birdathon may be obtained from Doug McRae, Birdathon Co-odinator, at the same address as the Fund (see above).

ALBERTA CHRISTMAS BIRD COUNTS 1988

Andrew C. Slater

In 1988 the Christmas Bird Count in Alberta continued to grow but the results were less extraordinary than in 1987. The number of counts reporting increased to a new record of 47. Several species had highest-ever totals and featured in new count records. No new species for the province were added this year, however. There were no gulls nor warblers as there were last year. The total number of species was 108, down from 111 but easily the second highest total to date.

The counts showing the greatest increase in numbers of species found were:

	Species in 1988	*Previous 5 year average*	*Percentage improvement*
1. Edson	33	22.0	50.0
2. Cardston	19	13.2	43.9
3. Claresholm	25	19.0	31.6

Edson had many more observers covering more spots and habitats than in previous years. Owling has become a regular feature of this count. Cardston's success is particularly commendable because there were only two participants. In their eight-hour day they put in plenty of effort and didn't miss many species in a variety of habitats. Claresholm maintained the surge in participants and effort that they began last year and are the first count to appear in the top three for a second year. Their Harris' Sparrow was a highlight and was well described.

Another count that I would like to single out for special mention is Wembley. They don't appear in the great improvement lists because, for a small count, they always get a lot of species, but I think that for a count in the north of the province, with no open water and only two participants, 995 birds of 29 species, including 5 owl species is a fine achievement. Two Horned Larks that far north are quite a surprise.

Calgary, as usual, had the highest number of species: 62, being slightly down from 65 and 69 in the last two years, and Edmonton, as usual, had the highest number of participants, 1083, consisting of 282 in the field and 801 at feeders. This was also down somewhat from last year, but featured a much higher proportion in the field.

The award for perseverance in the face of adversity must go to the three participants in the new Prairie Oasis count, who, while on their way to the count circle, were run off the road and into the ditch by a garbage truck full of convicts escaping from Drumheller Institution! After watching the escapees and the pursuing cavalcade of officers career past them, the trio recovered their scattered wits, manoeuvered their vehicle back on the road and proceeded with the count.

Waterfowl provided some of the most interesting reports this year. Edmonton's Oldsquaw was technically the best bird around because this species has not occurred on an Alberta CBC since 1973, the first year that a provincial compilation was done. Calgary's Black Duck was a close second as it also has appeared only once before, in 1984.

Western Grebe and Great Blue Heron were counted in the highest numbers to date while the heron was found on more counts than previously. Other waterfowl with highest ever totals were American Wigeon, Canvasback, Ring-necked Duck, Common Goldeneye, Harlequin Duck and Hooded Merganser.

Wabamun Lake achieved three all-time provincial highest counts: 75 American Wigeons, 14 Ring-necked Ducks and 26 Hooded Mergansers. Medicine Hat's 13 Canvasback was another all-time highest and so was Calgary's Harlequin Ducks.

Medicine Hat continued their practice of setting a new Canada Goose record every year (no fewer than 3,697) but the number of geese province-wide declined by 30% from last year. Mallard were down by 50%. Also scarce were Barrow's Goldeneye which are usually found on more than the one count where they showed up this year.

Bald Eagles were found in record numbers and Medicine Hat's outstanding 15 was the highest count ever. Northern Harriers and Golden Eagles were also at all time highs while Northern Goshawk numbers continued to recover from the trough of 1984 and '85. Rough- legged Hawks, however, declined to normal numbers with no concentration at the Snake's Head this year.

The two participants on the Bow Summit count found no fewer than 19 White-tailed Ptarmigan. The previous highest was 10 back in 1976; since then this species has been seen only in very small numbers. Ruffed Grouse were again at a new high; the cycle peak of the last three years has not started to decline yet. Sharp-tailed Grouse were also widespread in good numbers, while Spruce Grouse were found on more counts than ever before.

This is only the second year that Wild Turkeys have been reported. This is the first time a report has been received from the Cypress Hills where they have been introduced for several years, and very welcome it was! The previous count was in the

Porcupine Hills (another introduced population) in 1979.

It was a great year for owls, with the following species being found in record numbers and on more counts: Great Horned, Northern Pygmy, Great Gray, Short-eared, Boreal and Northern Saw-whet. The Wildlife Reserve's 9 Pygmies was an all time high, as was Edmonton's 22 Saw-whets, achieved by the extensive use of and good response to taped calls. Such methods are confirming that the guide books are right in classing this little owl as largely resident in most of Alberta; its just that they have not been detected before in winter in any numbers.

Short-eared Owl numbers were more than triple the previous high and so was the number of counts where they occurred; Edmonton's 30 was another all-time highest. In contrast, Snowy Owl numbers were well down from those of the last two years.

Another species found in record numbers in the Province was the Belted Kingfisher with Calgary's 9 the highest ever count. Most woodpeckers were numerous, but Three-toed and, particularly, Black-backed were comparatively hard to find.

It was an extraordinary year for Horned Larks, a bird usually reported only in a few small flocks. Numbers were more than double the previous high (in 1977) and Claresholm's 1031 was the highest count ever.

The beginning of an expansion by Stellar's Jay, which I thought was detectable last year, was not confirmed as the number of counts reporting this mountain species dropped from six to three. Another bird well down (over 50%) from last year was Red-breasted Nuthatch.

Bohemian Waxwings were much more widespread than last year, back to what could be considered a normal level, while Cedar Waxwings had their best year ever with Edmonton's 98 the highest count yet. Another significant Edmonton record count was their 31 Purple Finches; it was the first time that this species has featured on more than one count.

Lapland Longspur and Rosy Finch both showed up again after three-year absences, Snow Buntings were at highest numbers since 1984 and both Common and Hoary Redpolls were very numerous and widespread after a low year in 1987. The Wildlife Reserve turned in the all-time highest count of 2058 Common Redpolls.

One of the main objectives of publishing this annual compilation is to encourage new counts, and it is very gratifying that the number of counts reporting from many parts of the province is increasing year by year. I hope that the results of the most successful small counts mentioned earlier will encourage others to put in more time and effort on their counts and get more people to participate. That way the activity will become even more fun and rewarding.

I appreciated very much that nearly all the count compilers got their results to me by the deadline of January 31st. Many, many thanks.

* * * * *

Count Dates , Compilers and Participants

Banff/Canmore Dec. 17. Mike McIvor, Box 114, Banff, AB T0L 0C0. Participants: Morag Dornian, Susan Elder, Dave Elphinstone, Halle Flygare, Ellen Gasser, Jean Greig, Heather Holmes, Cathy Hourigan, Reinhold Lang, Diane McIvor, Mike McIvor, Brian Patton, Louise Patton, George Plewes, Louise Plewes, Mike Potter, Roger White, Jon Whyte, Gerry Wilkie (Bow Valley Naturalists).

Bashaw Dec. 26. D. Murray Mackay. Participants: Bachan Family, Mr. & Mrs. Raitt.

Bentley Count Coordinators: Percy and Jessie Palmer. Observers: Lois Galbraith, J.J. Kanngiesser, Beatrice Burles, Doug Bryant, F.A. McPhee, J. Abma, Sandy Holber, Vivian Busat, Dr. Patton, Sharon Murphy, Percy and Jessie Palmer, C. Summers.

Bow Summit Jan. 1. Mike McIvor, Box 114, Banff, AB T0L 0C0. Participants: Diane McIvor, Mike McIvor (Bow Valley Naturalists).

Brule Jan. 1. Coordinator: (Mrs.) Carly Deschuymer, General Delivery, Brule, AB T0E 0C0. Phone 865-2872.

Calgary Dec. 18. Ian Halladay, 2103 Crocus Rd., N.W., Calgary, AB T2L 0Z7. Participants: Des Allen, Kathy Bangay, John Bargman, Susan Bayne, Lynda Beecroft, Rudi Butot, Chris Bjornson, Polly and Ray Bjornson, Nancy Campbell, Carl Cooper, Mary Coughlin, Sheila Cox, Joe Crichton, Nancy Craig, Eileen Dann, Stu Dechka, Luke DeWit, Ross Dickson, Jean and Roger Dunn, Dave Elphinstone, Barry Giles, Howard Giles, Bob Greggs, Michael Hagel, Ian Halladay, Michael Harrison, Terry Harrison, Frank Hennessey, Doreen Higgin, Cedric Hitchon, Andrew Holder, Joanne Jamieson, Kate Jones, Gordon Kerr, Terry Korolyk, Del Lavallee, Pat Law, Sharon and Gary Lelliott, Jan and Len Marshall, Joan and Malcolm McDonald, John McFaul, Cathy McGlashan, Bill McKitterick, Jean Moore, Wally Platts, Jamey Podlubny, Marion Porter, James Posey, Dorothy Robertson, Shiona and Normand Roger, Mike Rogers, Scott Rogers, Peter Roxburgh, Barbara and Peter Sherrington, Jan Simonson, Gwen Simpson, Lori Skulski, Andrew Slater, Ena Spalding, Bob Storms, Jim Thompson, Suzanne Visser, Janice Waite, Jim Washbrook, Jim Webster, Jim White, Ray woods, Rob Woods, Ingrid Alexander, Winnie Amos, Anne-Marie Beckman, Darby Buckley-Jones, Elizabeth Dawson-Grove, Doreen Dickson, Morag Dornian, Bitten Ertmoed, Katie Fisher, Florence Godfrey, Joyce Goldsmith, Jean Irwin, Bonnie and Fred Jacobs, Don Jantzie, Steve Kassai, Estelle Kessler, Mac Love, Mary and Carson Manzer, Doris and Bob Marshall, Jean McCullough, Dave Matthews, Lorraine Moore, Dorothy and Lynn Newman, Hilda Obermeyer, Heidi Plum, Kay Power, Arne Sondergaard, Ann Taylor, Margaret Thompson, Grace Webber, Pat Wonfor.

Cardston Dec. 26. Teresa Dolman. Participants: Shirley Silleto, Weldon Sillito. Caroline Dec. 26. Tom Pierce and Myrna Pearman. Participants: Rosemary Brown.

Claresholm Dec. 26. Grace Norgard, Box 10, Claresholm, AB T0L 0T0. Participants: Hazel Hudson, Cara Moser, Jason and Ruth Atwell, Al Williams, Art Peterson.

Crestmere Dec. 26. D. Murray Mackay. Participants: Suset Family; Mrs. Edith Hall; Mrs. Opal Key, Harry Warren Family, Mrs. Alice Lewis.

Cypress Hills Jan. 8. Keith Bocking, Park Visitor Services Supervisor, Cypress Hills Prov. Park, Elkwater, AB T0S 1C0. Phone 403 893-3777.

Dickson Dam Jan. 8. Tom Pierce and Myrna Pearman. Participant: Jim Allen.

Drayton Valley Dec. 18. Helmut Amelang, P.O. Box 1591, Drayton Valley, AB T0E 0M0. Participant: H. & B. Boehm.

Edmonton Dec. 18. Gerry Lunn, 140 Royal Road, Edmonton, AB T6J 2E7. Participants: K.R. Abbey, Haary and Cathy Acheson, Peter Achuff, Will Agnew, Kim and Dave Allen, Dale Redfern Allen, Susan Alton, Ollie and Jim Anderson, Gary Anneiler, Lance Bard, Jim Bardy, Bonnie Baxter, Elisabeth Beaubien, James and Barbara Beck, Ted Belke, D. Belmonte, S. Jungkind, B, G. and A. Bembridge, Stan and Marg Bembridge, Anne and Joe Bembridge, Stephan Betkowski, Barry Birch, Adam and Arthur Bohnert, Mike Bokalo, Gary Boos, M. & K. Borch, Robin Bovey, Dale Bowes, Robb Bowker, Christine Brodie, Jamie Bruha, Jean Burgess, Jim Butler, Wendy Calvert, Richard Chemago, Linda Cheney, David Chesterman, Mike Clark, Kim and Suzanne Clark, Dick and Pat Clayton, Dawne Colwell, Tim Conlin, Ed and Nita Cooke, Bob Corbett, Tara Corcoran, Beth Cornish, Bill Craig, Ray Cromie, Pat Crossley, Alf and Family Gryderman, D. J. and C. Culbert, Bill Daly, Maggie Davidson, Linda Dawson, Joan Degeer, Peter Demulder, Joanne Dohy, Calvin Duane, Dave Ealey, Rainer Ebel, Doug Edgar Marilyn Edmonds, Gordon Elberon, A. Edldon and J. Faragher, Lois and George Elgood, Phyllis Fafard, Jim Faragini, Gaylene Fasenko, Willi Fast, Warren and Chris Finaly, Cam and Joy Finlay, Robert Folinsbee, Doris Francis, Helena Gavin, Chris and Don Gelinas, Joel Ghitter, Fay Gilmour, Jim and Diane Goodwin, Paul Gossen, Kelli Green, Laura Gretzinger, Ann Griffin, Doug Grover, Sam Gunsch, Janet Hamilton, Laurie and Ruth Hanchard, Brent Hefferman, Peter Heron, Barney Hickey, Alan Hingston, David Hirsh, Lisa and Chuji Hiruki, Wilfgang Hoffmann, Geoff and Michael Holroyd, Rodger Holtin, John and Leni Honsaker, Eric and Doris Hopkins, Laurie Hunt, Glen Hvenegaard, Paddi and Peter Jackson, D. and B. Jenkins, Derek Johnson, Wilf Johnson, Bill and Mary Keith, Mike Kelly, Pam and Peter Kenny, Gordon Kerr, Dan Kinder, Bruce Kinder, George and Eileen Kinsmen, Georgina Kneitel, Lynn Konowalyk, Mariena Kortes, Mary Kostigan, Doug Krystofiak, Mal Landry, Bob and Gail Lane, Jim Lange, Sandy Lapointe, Norm Larsen, Martha Laverty, David Lawrence, Curtis Lazar, Patty Lemke, Marg Lewis, Vic Lieffers, Fran Losie, Lana Louden, Angie Lunin, Gerry Lunn, G. and H. MacDonald, Gayford Madill, Pat Marklevitz, Noreen Marshall, Sherry Maslyk, Susan McDaniel, Nancy McFadden, Bonnie McFarlane, Colin McIntyre, Gerry McKeatin, Bruce McNab, Carol Merkley, John and Family Milligan, Trudy Mitchelson, Michel Monpetit, John Moore, Pierre Morin, Bruce Morrison, Dave Nadeau, George Newton, Cecil Nichols, Larry Nygaard, Pat O'Reilly, Elson Oldrenshaw, Jack and Eleanora Park, Alan and Sandra Paterson, R. and C. Pattenden, Don Pattie, Derry Perkin, Karen Perry, Fern and Don Pluth, Al Powelson, S. and T. Przyeorowski, Margaret Put, Dan and Marie Quinn, Mike and Jenny Quinn, Teal Rasmussen, B., D., L. and N. Reckhow, D. Reeves, K. Bourree, John Richards, Al and Sharon Robertson, Michelle Rodrique, Trevor Roper, Rich and Thomas Rothwell, France Royer, Charlotte Samis, Teresa Scholer, Barbara and Dave Selleck, Mary Sewell, Andrew Shoepf, Stuart Sinclair, Lou Skinner, Bob and Jean Smith, Barb and Darrell Smith, Carol Smith, Judith Smith, Michael and Jason Smith, J., J. and M. Spivak, Darcy Starrs, David Stelfox, H., T. and S. Stelfox, Casey Steneker, Mark and Tracy Tanguay, Felicia Taylor, Dova Tebby, Jan Terhart, Terry Thormin, Brian Toole, Roger Taylor, Thierry Varem, Julie and Pete Vernon, Cathy and Dick Volpel, Doug Wahlsten, Eric Wallace, Peter Whitehead, Pearl Williams, Qinn R.A. Wininger, Ernie Wieler, Christine Wolff, Beth and Gary Wood, Robert Wright, Hso and Kham Yawnghwe, Michael Yeomans, plus 801 at feeders.

Edson Dec. 31. J. Paul Marshall, Box 610, Edson, AB T0E 0P0. Participants: Malcolm and Beta Pugh, Raymond and Doreen Pugh, Gareth and Thomas Pugh, Carl and Laurie Hunt, John and Elaine Bright, Richard Quinlan, Dorcas Kennedy, Jan Edmonds, Lynn Dickson, Myrna Field, Arnie Johnson, Todd Mahon, Dean Musktuk, Kirk Fowler, Jim Trask, Chuck Lacy, Darren Peterson, Rory MacDonald, Heather and Corinne Marshall, Gloria Musson, Margaret Hird.

Elk Island Dec. 31. Geoff Holroyd, Canadian Wildlife Service, 4123 - 122 St., Edmonton, AB T6J 1Z1. Participants: Peter Achuff, Elisabeth Beaubien, Barb and Jim Beck, Debra Belmonte, Garry Boos, Jim Butler, Bob and Jan Carroll, Norm Cool, Ray Cromie, Les Davies, Peter Deering, Dave Dodge, Doug Dowell, Calvin Duand, Karl Grantmyre, Ann Griffin, Deidre and Graham Griffiths, Geoff Holroyd, Johane Janelle, Stefan Junkind, Doug Krystofiak, Jim Lange, Gerry Lunn, Pat Marklevitz, John Moore, Wes Olson, Dave Pick, Bob, Diane, Lynne and Nancy Reckow, Al and Sharon Robertson, Trevor Roper, Ken Schmidt, Teresa Scholer, Rick Scott, Darrell Smith, Ursula and Terry Winkler, Kathy and Rick Volpel, Christine Wolfe, Leslie Zilm (Edmonton Natural History Club, Friends of Elk Island Society, Strathcona Natural History Group).

Erskine Dec. 31. Lloyd Lohr, Box 1414, Stettler, AB T0C 2L0. Participants: G. and W. Hewlett, M. and R. Kruger, S. Kudras, L. Lohr, W. Muhlbach.

Evansburg Dec. 28. Hazel Fausak, Box 85, Evansburg, AB T0E 0T0. Participants: Helen Young, Michelle, Yvonne and Ray Fausak, Margaret Young, Gladys Shroder, Brandy Thompson, Ivan Feldberg.

Fort Smith Dec. 26. Jacques Saquet, P.O. Box 897, Fort Smith, N.T. X0E 0P0. Participants: Ken East, Marylynn East, Dan Frandsen, Judy Frandsen, Cormack Gates, Daniel Gates, Janet Gates, Ron Graaf, Gresswell Hamilton, Hans Hamilton, Dwade Hawley, Jody Kostiuk Les Kostiuk, Dan Langille, Doug Robertson, Jacques Saquet, Jean-Claude Saquet, Duncan Starling, Brent Starling, Susan Starling, Wayne Starling, Terry Trytten, Ruth Van Pelt.

Galahad Dec. 26. Tom Pierce and Myrna Pearman. Participant: Ida Vincett.

Gleichen Dec. 26. Tom Pierce and Myrna Pearman. Participants: Dave, Carole and Alex Silvester.

Grande Prairie Dec. 18. Peter Kennedy, #1205 - 9649 - 94 Ave., Grande Prairie, AB.

Hinton Dec. 17. Beth MacCallum, 110 Seabolt Drive, Hinton, AB T7V 1K2. Participants, Peggy Armstong, Rick Bonar, Matthew Ebel, Rainer Ebel, Barry Godsalve, Don Laishley, Beth MacCallum, Lauretta Mattes, Bill Mattes, Gerry Wilde, Jack Wright, Pat Caldwell, Sue Hindle, Jenny Hindle, Sally Hindle, Lorraine Keil, Norm Keil, Max Kudrenecky, Gwen Kudrenecky, Laura Simmonds, Leslie Simmonds, Gerry Wilde.

Homeglen Dec. 26. D. Murray Mackay. Participants: Mr. and Mrs. Frank Lind, Mrs. E. Burns.

Horseshoe Canyon Dec. 24. Robert W. Storms, #905 - 815 14th Ave., S.W., Calgary, AB T2R 0N5. Participants: Myrtle Biggs, Gary Clarke, Stuart Dechka, Luke de Wit, Ross Dickson, Louis Guillemette, Ed Mah-Lim, Bill McKitterick, Mark Sherrington, Peter Sherrinton, Lori Skulski, Wayne Smith, Robert Storms, John Thompson, Merrill Wershler, Ray Wershler.

Innisfail Dec. 24. Tom Pierce and Myrna Pearman. Participants: David and Dorothy Dickson.

Joffre Dec. 24. Tom Pierce and Myrna Pearman. Participant: Colleen Graham.

Lacombe Dec. 24. Tom Pierce and Myrna Pearman. Participants: Lynette Hart, Mr. R. Hart, Mrs. B. Hart, Mrs. S. Foster, D. Bott, Clarence Haitsma.

Lethbridge Dec. 26. Teresa Dolman, Biological Sciences Dept., The University of Lethbridge, 4401 University Drive, Lethbridge, AB T1K 3M4. Participants: Anne and Bill Brown, Bill Brown Jr, Bogdon Gorny, Betty Haig, Alice and Frank Harper, Olga and Harold Hughes, Kent Isaacson, Lois McKillop, Sheila Petherbridge, Doris Rhodes, Alan Roberts, Katharine, Alex and Frank Russell, Francis and Arvid Schultz, Hazel West, and Jessica, Joyce and Paul Wilkinson.

Long Island Lake Jan. 1. Patricia E. Mackonka, P.O. Box 100, Westlock, AB ToG 2L0. Participants: William Stilwell, Anastasia Martin-Stilwell

Mecca Glen Dec. 26. D. Murray Mackay. Participants: Gordon Hanson, Eric Kolfe Family

Medicine Hat Dec. 18. Rob Gardner, 548 - 11 Street S.E., Medicine Hat, AB T1A 1T3.

Pine Lake Dec. 18. Tom Pierce and Myrna Pearman. Participants: Mr. and Mrs. Underwood.

Ponoka Dec. 26. D. Murray Mackay, Box 1479, Ponoka, AB T0C 2H0. Participants: Mr. and Mrs Scotty Nichols, Betty and Jerry McMillan, Tim Schofer Family, Roy Barrett Family, John Courser Family, Mr. and Mrs. Berdine, Mr. and Mrs. M. Morrow, Shirley Clements, Larry Lintz, Van Mannen Family, Mrs. McCaughley, M. Hyink Family, M. Mackay Family, Bob Ragan, Mr. and Mrs. E. Hageman, Mr. and Mrs. G McCaughey, Mr. and Mrs. E. Osterguaard, Mr. and Mrs. Rowland, Quinn Fate, Sheri Scott and Family, H. Eilenstien Family, Mr. and Mrs. Roy Vold, Mr. and Mrs. R. Welsh, Heidt Family, Mr. and Mrs. L. Cline, Mr. and Mrs. John McLaren, Vandenbery Family, R. Bartley, Bednar Family, Mr. and Mrs. V. Thacker, Mr. and Mrs. W. Meuller, Bill Chorny, Frock Family, Mr. and Mrs. Lafernier, Mr. and Mrs. D. Graham, A. Walcheski, Mr. and Mrs. H. Wilcox, Merle Jones, Mildred Lyons, D. James Family, Mr. and Mrs. D. Schalin.

Prairie Oasis Dec. 28. Joan McDonald, 91 Range Way N.W., Calgary, AB T39 1H6. Participants: Malcolm McDonald, Ross Dickson.

Red Deer Dec. 28. Tom Pierce and Myrna Pearman, P.O. Box 127, Sylvan Lake, AB T0M 1Z0. Participants: James and Lynn Newnham, Keith and Beryl Steele, Moran and Ursula Fedak, Kerry, Marjorie and Rondo Wood, Gladys and Herny Lembicz, John Malinic, Oscar Orr Jr., Marion Everson, Erling and Margaret Glabais, Ione Napper, Herb and Helen Harris, John Drever, Sandy and Dorothy Murray, Keith Kline, Fred Anderson, Harvey Smith, Wendy Martindale, Jim, Anna and Patrick Robertson, Ted and Eric Johnson, Dorothy, Jason and Greg Hazlett, Myrna Pearman, Tom and Marie Pierce, P. Simpson, John, Arctica and Dallas Campbell, Hughie and Betty Pearman, Tom Stevens, Sophia and Andrew Kooman, Olaf Jensen, Eldon and Carol Neufeld, Morris Flewwelling, Gordon Cunningham, Peggy Anderson, Michael and Jennifer O'Brien, Cleve Wershler, Ray and Freda Bertram.

Rimbey Dec. 28. Tom Pierce and Myrna Pearman. Participants: Earl and Mary Eadie, Lorna Diggle, Bill and Adeline Nesbitt.

Rocky Mountain House Dec. 28. Tom Pierce and Myrna Pearman. Participants: Phyllis Jarvin, Hazel Anderson, Katie and Fernie Chevallier, Doug and Bernice Meston, Bob and Phyllis Rhein, Dale AuBuchon, Helen Taylor, Mrs. Freeda Fleming, Laurine and William McNutt, Fred Sutherland, Robert Spoor, C. Walton, Dennis Frisky, Mrs. Annie Hansel, Pat Storm, Ken Woollard, Mr. and Mrs. Randy McNutt, John and Kathleen Elliot, Jack and Angie Edgerton, Anna Gilchrist.

St. Paul Dec. 18. Blair Rippin, Box 1836, St. Paul, AB T0A 3A0, Ernie Ewaschuk, Box 3212, St. Paul, AB T0A 3A0. Participants: Ken Bishoff, Paul Boisvert, Steve Brechtel, Don Cole, Norma Cole, Roland Decosse, Ernie Ewaschuk, Ferna Ewaschuk, Dennis Giggs, Grant Gunderson, Stephen Hamilton, Velma Hudson, Richard Klauke, Jeff Kneteman, Floyd Kunnas, Julie Laux, Ray Makowecki, Greg McCormick, Gary Padlesky, Keith Pugh, Blair Rippin, Otto Siemers, Mike Sullivan Hillary Tenove, Ken Tenove, George Walker, Shari Walker, Harvey Woytiuk, Dave Zarowny, Heidi Zwickel

Snake's Head Dec. 26. Doug Collister, 3426 Lane Cres. S.W., Calgary, AB T3E 5X2. Participants: Bev Cheesmur, Bob Cheesmur, Eileen Dann, Stu Dechka, Ross Dickson, Joel Duncan, Gary Grothman, Horst Grothman Louis Guillemette, Ferrell Haug, Ann Konecny, Randy Lauff, Joan McDonald, Malcolm McDonald John McFaul, Bill McKitterick, Jamey Podlubny, Jim Posy, John Riddell, Kathy Robertson, Ken Robertson, Peter Sherrington, Lori Skulski, Wayne Smith, Bob Storms, John Thompson, Suzanne Visser, Merrill Wershler, Ray Wershler.

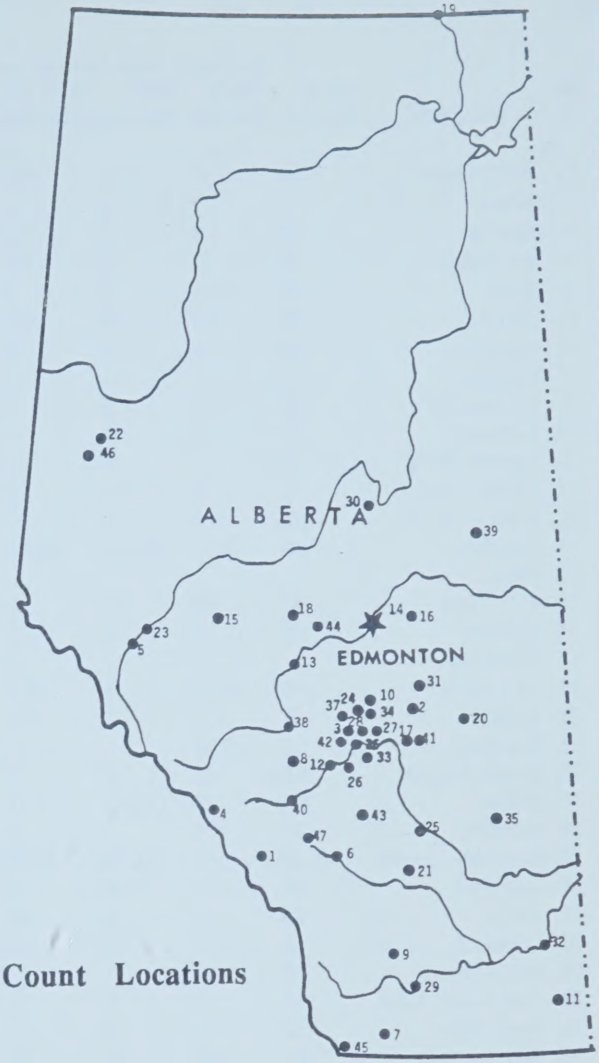
Stettler Dec. 18. Lloy Lohr, Box 1414, Stettler, AB T0C 2L0. Participants: D. Brownlee, A. and J. Burrell, H. and N. Charles, B. Clarke, F. Dodds, T. Grafe, E. Grose, G. and W,. Hewlett, E. Kirtley, E. Hisser, M. and R. Kruger, B. and M. Lohr, L. Lohr, G. and G. Neill, H. Shinness, M. and R. Walentowitz.

Sylvan Lake Dec. 18. Tom Pierce and Myrna Pearman. Participants: Mary Pijeau, Marie Pijeau, Jack Smalley, John Treleaven.

Three Hills Dec. 18. Tom Pierce and Myrna Pearman. Participants: Elaine, Carol and Gayle Tupper.

Wabamun Lake Jan. 1. Alan Hingston, 53 Wakefield Blvd., St. Albert, AB T8N 3G1. Phone 459-6389. Participants: Dave and Kim Allan, Jim and Barb Beck, Gary Boos, Jim Butler, Kim Clark, Dick and Pat Clayton, Dave Cuthiell, Alan Hingston, Wes Hochachka, Derek Johnson, Stefan Jungkind, Jim Lange, Gerry and Jennifer Lunn, Pat Marklevitz, Dave Nadeau, Harold Pankratz, Alf Scott, Mark and Tracy Tanguay, Terry Thormin Christine Wolff.

Waterton Lakes Dec. 17. Teresa Dolman, Biological Sciences Dept., The University of Lethbridge, 4401 University Drive, Lethbridge, AB T1K 3M4. Participants: Anne and Bill Brown, Teresa and Doug Dolman, Graeme, Patty and Valerie Greenlee, Terry Hammell, Jennifer and Lynn Mather, Keith McDougall, Chantal Ouimet, Beth Russell, Shirley Sillito, Janice and Fraser Smith, and Jessica, Joyce, and Paul Wilkinson.



Count Locations

Wembley Dec. 17. Gavin and Ellen Craig, R.R. 1, Wembley, AB T0H 3S0.

Wildlife Reserve Dec. 31. Jamey Podlubny, 4520 Bulyea Road. N.W., Calgary, AB T2L 2J3. Phone 282-6525. Participants: Des Allen, Doug Collister, Sheila Cox, Stuart Dechka, Luke de Wit, Ross Dickson, Olga Droppo, Joan Dunn, Roger Dunn, Jenny Feick, Horst Grothman, Mike Harrison, Doreen Higgin, Clay Hunt, Joanne Jamieson, Kate Jones, Mike Klazek, Woody Kuehn, Randy Lauff, Karen McCullough, John McFaul, Betty Millham, Jean Moore, Jamey Podlubny, Alarie Posey, Gillian Posey, Jim Posey, John Riddell, Daphne Rogers, Barbara Sherrington, Peter Sherrington, Lori Skulski, Wayne Smith, Don Stiles, Philip Stiles, Bob Storms, Suzanne Visser, Merrill Wershler, Ray Wershler, Bill Wilson, Ray Woods.

Christmas Count Coverage And Weather Conditions

MAP NO.	COUNT NAME	KMS BY VEHICLE	KMS ON FOOT/SKI	HOURS VEHICLE	HOURS ON FOOT/SKIS	WATCH HRS. FEEDERS/ OWLING	MAX TEMP DEG CELC	MIN TEMP DEG CELC	MAX WIND KMH	MIN WIND KMH	MAX DEPTH SNOW, CMS	MIN DEPTH SNOW, CMS
1.	Banff/Canmore	254	97	10.5	60.5	34	-3	-10	24	0	22.5	15
2.	Bashaw	0	2	0	1	5	-18	-21			6	0
3.	Bentley	40	1	3	0.5	63.5	-15	-29	10	0	20	8
4.	Bow Summit	45	17	1	8.5	0	-13	-21	16	0	67.5	55
5.	Brule	28	9	1	4	6	-4		80	60		
6.	Calgary	752	307	38	171	175	11	0	13	6	5	5
7.	Cardston	105	5	6	2		-10	-18	0	0		
8.	Caroline					4						
9.	Claresholme	200	5	16	2	0	-18	-26	16	0	5	0
10.	Crestmere	0	10	0	4	6	-18	-22	0	0	6	4
11.	Cypress Hills											
12.	Dickson Dam		5		3		-15	-20	0	0	20	15
13.	Drayton Valley	200	3	6	1	2	4	3	0	0	10	7
14.	Edmonton	1599	801.7	101.25	430.75	1310.75	3	-2	19	0	2.5	0
15.	Edson						0	-25				
16.	Elk Island	487	196	32	79	22	-17	-26	10	0	10	5
17.	Erskine	115	5	9	4	3	-17	-23	0	0	30	15
18.	Evansburg											
19.	Fort Smith	45	46.5	5	25.5	2.5	-27	-34	10	0	30	25
20.	Galahad					4	-10					
21.	Gleichen	12	2.25				-18	-18	20	10	15	10
22.	Grande Prairie	145	15	8	3	8	4	0	15	0	10	0
23.	Hinton	265	21	16.75	11	28	-1		20	0	10	10
24.	Homeglen	10	6	1	2		-20	-22			8	
25.	Horseshoe Canyon	441.75	111	14.75	50.25	0	-13	-18	15	0	5	2
26.	Innisfail	40	3	1.5	2		-16	-16	0	0	8	0
27.	Joffre	25	1	2	0.5			20				
28.	Lacombe	8	1	1	0.5	17	-22	-24	1	0	15	5
29.	Lethbridge	80	28				-15	-20	0	0		
30.	Long Island Lake	252	2	7	1	3	-13	-20	10	5	25	11
31.	Mecca Glen	10	1	2	1		-18	-22			6	
32.	Medicine Hat	551	89	40	44	18	10	1	50	10	0	0
33.	Pine Lake					3						
34.	Ponoka	220	100	12	22	205	-18	-24	0	0	10	6
35.	Prairie Oasis	92	0	4.5	0	0	-10	-13			8	
36.	Red Deer	111	107.25	7.5	39.75	104.5	-19	-28	10			
37.	Rimbey		25		6.5				0			
38.	Rocky Mtn. House	17	28	2	11	86.5	-14	-23	6	0	16	12
39.	St. Paul	554	49.6	59	25.25	0	2	-3	0	0	15	5
40.	Snakes Head	1013.2	152.4	45.75	73	6	-7	-21	8	0	20	15
41.	Stettler	195	9	14.75	4	12	5	3	0	0	12	8
42.	Sylvan Lake	0	9	0	1.5	12	-20	-25	5	0	20	10
43.	Three Hills		5		1.5		-14	-22	5	2	10	4
44.	Wabamun Lake	706	78	38	37	13	-7	-27	20	5	15	8
45.	Waterton Lakes	126	44				10	0				
46.	Wembley	160	0	5	0	5	4	0	15	0	3	0
47.	Wildlife Reserve	1179	186	49	92	4.5	12	-23	8	0	15	2.5

Alberta Christmas Bird Counts 1988

LOCALITY SPECIES	BANFF/ CANMORE	BASHAW	BENTLEY	BOW SUMMIT	BRULE	CALGARY	CARDSTON	CAROLINE	CLARES-HOLM	CREST-MERE	CYPRESS HILLS	DICKSON DAM	DRAYTON VALLEY
Canada Goose						305							
Mallard	654					12490	1000				732		
Common Goldeye	230					392						0	30
Common Merganser	3					27							
Bald Eagle	2					4	1					2	
N. Goshawk						5							
Rough-legged Hawk		1				2	1		2				
Golden Eagle							2		3				
Merlin	1		2			12	1		3				
Gray Partridge			19			70	10		115				
Ring-necked Pheasant			2			8	2		6				
Ruffed Grouse						11		1		6			1
Sharp-tailed Grouse						11			4				
Rock Dove			40			2122	24		345				
Great Horned Owl	1					7	2		3				
Snowy Owl							1		2				
N.Pygmy Owl	1												1
Short-eared Owl													
Belted Kingfisher	2					9							
Downy Woodpecker	12	8	21		2	45	1		3	3	2		3
Hairy Woodpecker	8	4	13		2	20	1						2
Three-T. Woodpecker	4			2									
N. Flicker	3		3			13	3		1				1
Pileated Woodpecker	2	1				1							
Horned Lark							5		1031				
Gray Jay	37			2	1	1				1			5
Blue Jay	2	5	29			66			1	11			18
Bl. Billed Magpie	153	1	43			1339	31		103	9	12		7
Am. Crow	17					28	1						3
C. Raven	217	1		2	36	30		2	18	3			5
Bl. Capped Chickadee	160	64	171		15	661	16		6	66	22	5	38
Mountain Chickadee	162				2								
Boreal Chickadee	52		5	13	2	44				9			
Red-br. Nuthatch	39					21							
White-br. Nuthatch	7	4	4			29				5			4
Brown Creeper	3					15							
Am. Dipper	26			1		4			1				
Golden-cr. Kinglet	11					42							
Bohemian Waxwing	383		130			2309			210				
Northern Shrike						2							
European Starling	4					1022			1				
Dark-eyed Junco	1				5	5							
Snow Bunting									143		1		80
Pine Grosbeak	96		20			29							
Wh. Winged Crossbill	35					111							
C. Redpoll	75		266			337	16		6				8
Hoary Redpoll			3										
Pine Siskin	4					27							
Evening Grosbeak	152	73	16						3				28
House Sparrow	164	3	357			1472	226		252	142			
Total Species	46	11	18	6	8	62	19	2	25	10	5	4	16
Total Individuals	2965	165	1162	42	65	23246	1344	3	2265	237	52	743	234
Total Observers	19	4	13	2	11	110	2	1	7	7	7	1	3

Alberta Christmas Bird Counts 1988

LOCALITY SPECIES	EDMONTON	EDSON	ELK ISLAND	ERSKINE	EVANSBURG	FORT SMITH	GALAHAD	GLEICHEN	GRANDE PRAIRIE	HINTON	HOMEGLEN	HORSESHOE CANYON	INNISF
Canada Goose	1												
Mallard	2971												
Common Goldeneye	360								1	8			
Common Merganser	1									5			
Bald Eagle		2											
N. Goshawk	6	1										3	
Rough-legged Hawk	5	1										4	
Golden Eagle												3	
Merlin	28											1	
Gray Partridge	420			1								8	
Ring-necked Pheasant	100											7	
Ruffed Grouse	56	60	19		2	3			4	6	1		
Sharp-tailed Grouse	2	12										6	
Rock Dove	4896	89	63	2				102		1		103	
Great Horned Owl	65		7	4		1						7	
Snowy Owl	2		1									1	
N. Pygmy Owl		3											
Short-eared Owl	30		2	2								15	1
Belted Kingfisher										1			
Downy Woodpecker	191	44	57	1	4	1			7	2	4	9	2
Hairy Woodpecker	67	35	52	1	4	2	1		6	5	4	2	1
Three-t. Woodpecker	1	1	2							2			
N. Flicker	7											2	
Pileated Woodpecker	17	8	1		2								
Horned Lark												530	
Gray Jay	5	125			6	12			7	20	2		
Blue Jay	1598	159	94	2	15		4		27	6	9	6	
Bl. Billed Magpie	3219	47	191	28	24		2	19	27	30	2	297	8
Am. Crow	4												
C. Raven	1	173	3	2	7	262			21	290			
Bl. Capped Chickadee	4737	427	857	18	147	28	8		36	91	38	222	16
Mountain Chickadee	2												
Boreal Chickadee	49	39	36		2	35			13	15	2		
Red-br. Nuthatch	21	8			2					23		4	
White-br. Nuthatch	131	19	26		4				3		2	1	
Brown Creeper			9										
Am. Dipper										2			
Golden-cr. Kinglet	23	4	9									28	
Bohemian Waxwing	6325	62	2	50		3			181			949	
Northern Shrike	8	1	3							2		1	
European Staring	827	10			1							21	2
Dark-eyed Junco	32					7							
Snow Bunting	12	424	305	390	37				16	13		437	65
Pine Grosbeak	101	201	29			201			1	2		2	
Wh. Winged Crossbill	8	3				2				26			
C. Redpoll	702	21	161		6	114			100	491	40	286	
Hoary Redpoll	7	27	6		8	12			30				
Pine Siskin	33		1		10					30			
Evening Grosbeak	251	138	289	8		82			62	68	30		
House Sparrow	10632	340	253	60	104		52	74	70	173	48	284	18
Total Species	57	33	27	14	18	17	5	3	18	29	12	31	8
Total Individuals	38138	2591	2478	571	385	765	67	195	598	1370	172	3247	113
Total Observers	1083	28	57	7	9	23	1	3	3	21	4	16	2

Alberta Christmas Bird Counts 1988

LOCALITY	JOFFRE	LACOMBE	LETHBRIDGE	LONG ISLE LAKE	MECCA GLEN	MEDICINE HAT	PINE LAKE	PONOKA	PRAIRIE OASIS	RED DEER	RIMBEY
SPECIES											
Canada Goose			245			3697					
Mallard			560			2411			85	177	
Common Goldeneye			99			320			11		
Common Merganser						10			2		
Bald Eagle			2			15				1	
N Goshawk				1		1					
Rough-legged Hawk			2								
Golden Eagle			2			3					
Merlin			1			4		1		1	
Gray Partridge			56			103		112			
Ring-necked Pheasant			1			59	1	24		4	
Ruffed Grouse					4	7	11			7	
Sharp-tailed Grouse				1		23			10		
Rock Dove	15		33	4		1409		448		291	
Great Horned Owl			5	4	2	3		6	1	2	
Snowy Owl								3			
N. Pygmy Owl											
Short-eared Owl						1		7	7		
Belted Kingfisher						4					
Downy Woodpecker		4	3	2		6	2	45		51	3
Hairy Woodpecker		1	2	5		1		19		28	
Three-T. Woodpecker											
N. Flicker			8			23				2	
Pileated Woodpecker				2				3		5	
Horned Lark			100			674			3		
Gray Jay				10							2
Blue Jay	6	15	1	17	3			92		78	6
Bl. Billed Magpie	7	3	129	17	6	631		148	8	214	
Am. Crow			4			4		2			
C. Raven				3				3		2	1
Bl. Capped Chickadee	9	29	33	18	29	76	11	641		553	23
Mountain Chickadee											
Boreal Chickadee				2				23		54	3
Red-br. Nuthatch			1			4				8	
White-br. Nuthatch				2				24		19	
Brown Creeper						2				1	
Am. Dipper											
Golden-cr. Kinglet						11					
Bohemian Waxwing			17		6	13		397		2217	14
Northern Shrike						2		1			
European Starling		4	68			181		89		135	
Dark-eyed Junco		1	4			20				9	
Snow Bunting				135		5		305	90	30	50
Pine Grosbeak										12	
Wh.-winged Crossbill											
C. Redpoll	39		15	130		3		746		446	201
Hoary Redpoll								36		2	14
Pine Siskin										6	
Evening Grosbeak	10	32		10				433		97	8
House Sparrow	135	118	193		50	2958		1284	18	338	
Total Species	7	11	31	19	7	42	4	29	11	31	12
Total Individuals	221	210	1629	366	100	12728	21	4806	236	4794	326
Total Observers	1	6	23	3	3	44	2	89	3	57	5

Alberta Bird Counts 1988

LOCALITY SPECIES	ROCKY MTN HOUSE	ST.PAUL	SNAKE'S HEAD	STETTLER	SYLVAN LAKE	THREE HILLS	WABAMUN LAKE	WATERTON LAKE	WEMBLEY	WILDLIFE RESERVE	TOTAL
Canada Goose			1				14				4263
Mallard			199				447			402	22128
Common Goldeneye							620	24			2095
Common Merganser							8				56
Bald Eagle			1				1	2		3	36
N. Goshawk		1	2						2	2	24
Rough-legged Hawk			6				1			4	29
Golden Eagle			1					2	2	1	19
Merlin		1	1						1		58
Gray Partridge			24						18	9	965
Ring-necked Pheasant		1	3						6		224
Ruffed Grouse		14	24	1			12	7	6	37	300
Sharp-tailed Grouse		4		8			41	4	41	2	169
Rock Dove		269	125	168		20	31		2	35	10637
Great Horned Owl		7	3	2			4		2	7	145
Snowy Owl							2		1		13
N. Pygmy Owl	1		3							9	18
Short-eared Owl			7	2			1		2	7	84
Belted Kingfisher			1							1	18
Downy Woodpecker	10	14	37	9	7		44	3	4	34	700
Hairy Woodpecker	7	8	17	4			27	3	6	14	371
Three-T. Woodpecker			5				1			4	22
N Flicker											66
Pileated Woodpecker	3		6		1		3			4	59
Horned Lark									2		2345
Gray Jay	24	1	60	1			47	8	3	88	469
Blue Jay	34	25	63	10			97		8	44	2551
Bl. Billed Magpie	53	130	228	89	16		162	22	115	231	7801
Am. Crow			1				1				65
C. Raven	59	21	184	6			34	20	16	316	1738
Bl. Capped Chickadee	211	216	467	115	23	55	827	69	25	693	11870
Mountain Chickadee			1					11		14	192
Boreal Chickadee	7		230		1	53	50			225	964
Red-br. Nuthatch	1		23					26		47	228
White-br. Nuthatch	7	3	9		3		24			7	337
Brown Creeper	1		10				1			13	55
Am. Dipper			8					7		6	55
Golden-cr. Kinglet	3		109					10		27	255
Bohemian Waxwing	101	810	5	48			3		575	5	14815
Northern Shrike		3	3				11		2	3	42
European Starling	22	21	31				10				2449
Dark-eyed Junco	3		2							1	90
Snow Bunting	31	617	761	32			303	27	50	214	4573
Pine Grosbeak	38		31				47	4	9		821
Wh.-winged Crossbill			28				1			409	623
C. Redpoll	74	9	395	30	20		410	3	76	2058	7282
Hoary Redpoll		2					22		6	1	176
Pine Siskin					3						114
Evening Grosbeak	119	52	39		38		169	20	14	28	2269
House Sparrow	194	1034	128	417	5		168		5	126	21877
Total Species	24	24	45	19	10	3	50	25	29	42	108
Total Individuals	1012	3260	3292	947	117	128	3849	287	995	5171	125423
Total Observers	27	30	32	23	4	3	25	19	2	41	

Species Recorded On Five Or Fewer Counts

SPECIES	COUNTS AND NUMBER RECORDED
Western Grebe	Wabamun Lk. 4
Gt.Blue Heron	Calgary 3; Medicine Hat 1; Ponoka 1; Waterton Lks. 1
Green Winged Teal	Banff 2; Calgary 4
Am. Black Duck	Calgary 1
N. Pintail	Banff 1; Calgary 16; Edmonton 11; Wabamun Lk. 3
Gadwall	Calgary 12; Wabamun Lk. 3
Am. Wigeon	Calgary 9; Dickson Dam 4; Medicine Hat 1; Wabamun Lk. 75
Canvasback	Medicine Hat 13; Wabamun Lk. 2
Redhead	Calgary 3; Wabamun Lk. 25
Ring-necked Duck	Wabamun Lk. 14
Lesser Scaup	Calgary 4; Medicine Hat 5; Prairie Oasis 1; Wabamun Lk. 16
Scaup sp.	Waterton Lks. 1
Harlequin Duck	Calgary 5
Oldsquaw	Edmonton 1
Barrow's Goldeneye	Calgary 5
Goldeneye sp.	Banff 8
Bufflehead	Banff 3; Calgary 4; Edmonton 1; Wabamun Lk. 10
Hooded Merganser	Calgary 1; Wabamun Lk. 26
R.-breast. Merganser	Calgary 1
Ruddy Duck	Wabamun Lk. 2
Northern Harrier	Calgary 1; Edmonton 4; Medicine Hat 6
Sharp-sh. Hawk	Lethbridge 1; Snake's Head 1
Cooper's Hawk	Calgary 1; Stettler 1
Accipiter sp.	Banff 1
Red-tailed Hawk	Hinton 2
Eagle sp.	Wabamun Lk. 1
Gyrfalcon	Medicine Hat 1; Red Deer 1
Prairie Falcon	Calgary 2; Clareshom 2; Horseshoe Canyon 4; Medicine Hat 1; Wildlife Res. 2
Falcon sp.	Edmonton 1
Spruce Grouse	Edson 2; Ft. Smith 1; Hinton 2; Rocky Mtn. Hse. 8; Waterton Lks. 1
Willow Ptarmigan	Ft. Smith 15
Wh.-tail. Ptarmigan	Bow Summit 19
Wild Turkey	Cypress Hills 15
Am. Coot	Calgary 1; Wabamun Lk. 13
Killdeer	Banff 8; Calgary 9; Snake's Head 10; Wabamun Lk. 1; Waterton Lks. 2
C. Snipe	Banff 1
Mourning Dove	St. Paul 1
N. Hawk Owl	Edmonton 1; Wembley 2
Barred Owl	Long Island Lk. 1
Gt. Gray Owl	Edson 5; Elk Island 1; Hinton 1; Long Island Lk. 2; Wildlife Res. 7
Boreal Owl	Edmonton 2; Edson 1; Wembley 1
N. Saw-whet Owl	Calgary 1; Edmonton 22; Ponoka 1
Bl. Backed W'pecker	Wabamun Lk. 1
Steller's Jay	Banff 2; Edmonton 1; Waterton Lks. 8

Clark's Nutcracker	Banff 96; Waterton Lks. 2
Chickadee sp.	Banff 118; Bow Summit 3
Winter Wren	Banff 1; Edmonton 1
Townsend's Solitaire	Banff 1
American Robin	Calgary 6; Edmonton 6; Lethbridge 3; Red Deer 3; Rocky Mountain House 1
Thrush sp.	Hinton 1
Cedar Waxwing	Edmonton 98; Medicine Hat 18
Loggerhead Shrike	Lethbridge 1
Am. Tree Sparrow	Calgary 8; Horseshoe Canyon 3; Lethbridge 12
Song Sparrow	Lethbridge 2
Wh.-throated Sparrow	Edmonton 2
Wh.-crowned Sparrow	Medicine Hat 1
Harris' Sparrow	Claresholm 1
Lapland Longspur	Horseshoe Canyon 1; Medicine Hat 5
Red-winged Blackbird	Banff 2; Lacombe 2
W. Meadowlark	Rimbey 1
Rusty Blackbird	Wabamun Lk. 9
Brewer's Blackbird	Lacombe 1
Blackbird sp.	Calgary 1; Wildlife Res. 1
Rosy Finch	Lethbridge 26
Purple Finch	Edmonton 31, Ponoka 1; Stettler 1
Red Crossbill	Edmonton 3; Hinton 30; Snake's Head 1; Wildlife Res. 20
Redpoll sp.	Edson 99; St. Paul 123
Bird sp.	Hinton 22

Cover Photo: **Red Squirrel** *(Photo: Jim R. Salt)*

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